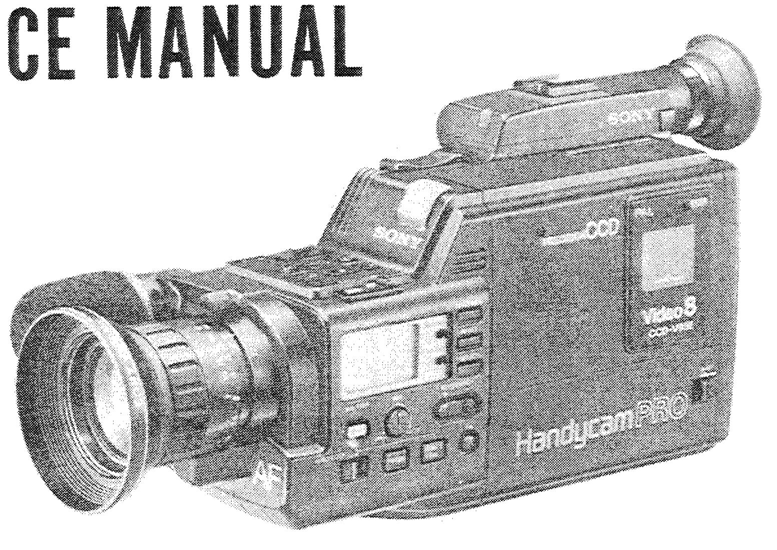
CCD-V95E

SERVICE MANUAL

AEP Model
Australian Model
E Model



Handycam PRO
Video 8

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 20.051 mm/sec. LP: Approx. 10.058 mm/sec.
Recording or playback time	SP: 90 min. (P5–90) LP: 180 min. (P5–90)
Fast forward time	Approx. 6 min. 15 sec. (P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electric viewfinder (0.7" black and white)
Lens	Combined 6 × power zoom lens f = 12–72 mm, F1.6 with macro Filter diameter: 46 mm
Auto focus system	TCL
Colour temperature	Preset values OUTDOOR: 5,800 K INDOOR: 3,200 K Auto: From the light at a tungsten lamp to the light on a slightly overcast day.
Minimum illumination	7 lux
Illumination range	7 lux–100,000 lux (0.46–9,294 footcandles)
Recommended illumination	More than 100 lux (9.3 footcandles)
Aperture correction	Automatic, manual (variable)

Input and output connector

Output jacks	Video output: phono 1 Vp-p, 75 ohms unbalanced, sync negative Audio output: phono −10 dBs, at output impedance less than 2.2 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote connector	5-pin connector
MIC jack	Minijack, −66 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

Display in the viewfinder

Mode indication	REC/STBY/OUTDOOR/INDOOR/shutter speed
Caution indication	BATTERY/DEW/TAPE END/CAUTION/CASSETTE
Date or time indication	Small 8 characters Date: From Jan. 1, 1988 to Dec. 31, 2015 Time: 24 hour cycle
Clock	Crystal lock
Memory back-up	Approx. 2 years using the CR2025 lithium battery

General

Power requirements	6.0V (using battery pack)/ 7.5V (using AC power adaptor)/ 9.0V (using alkaline batteries) DC
Power consumption	6.3W (camera recording) including the viewfinder
Installation	Horizontally, vertically
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 99 × 136 × 330 mm (w/h/d) (4 × $5\frac{3}{8}$ × 13 in.)

--Continued on next Page--

8 VIDEO CAMERA RECORDER

SONY®

Weight	Approx. 1.1 kg (2 lb 7 oz) excluding the battery and cassette Approx. 1.3 kg (2 lb 14 oz) including the NP-55 battery and cassette
Microphone	Electret condenser microphone, uni-directional monaural type

Accessories supplied
Lithium battery (1)
Lens cap (1)

Optional accessories
Battery pack NP-55, NP-77, NP-22, NP-4000
Battery case EBP-55
AC power adaptor AC-V55
Car battery cord DCC-16AE
DC pack DCP-55
Battery adaptor NPA-22

Design and specifications are subject to change without notice.

Your dealer may not handle some of the above listed optional accessories. Please ask the dealer for detailed information about the optional accessories available in your country.

Note
This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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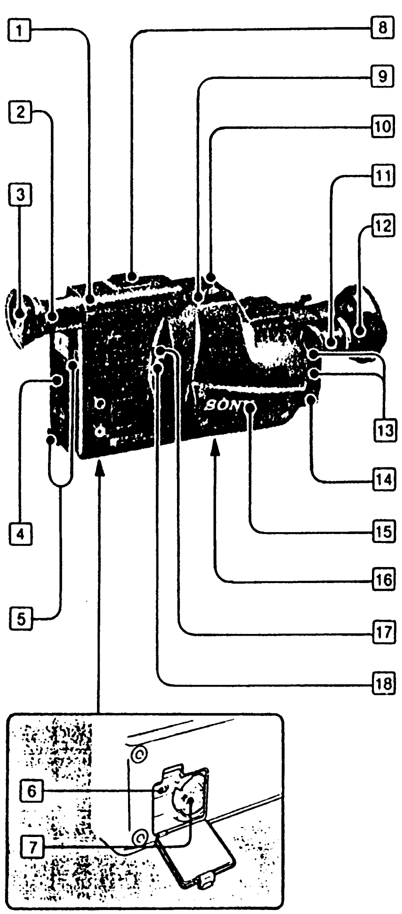
A-1



Location and Function of Parts and Controls

For details on the use of each control, refer to the pages indicated in the circle.

Video camera section

A-1

1 **Viewfinder**
The picture being recorded or played back can be monitored in monochrome through this viewfinder. Data such as the function mode, caution indicators, date, time, are also displayed on the viewfinder screen.

2 **Viewfinder lens adjustment lever ❾**
Adjust to your eyesight to assure good focus. Be sure to adjust this lever when shooting for the first time.

3 **Eyecup ❾**

4 **Battery mounting surface ❼**

5 **Hooks for shoulder strap**

6 **Recording mode/EDIT switch**
Switch it depending on the operating mode.

Mode	Recording	Playback	Editing
Setting	SP LP	EDIT	EDIT
Function	Recording mode switch	EDIT switch	

7 **Lithium battery compartment ❾**

8 **Accessory shoe**
Attach an optional external microphone, video light, etc.

9 **Power zoom button ⓯**
Press for smooth power zooming between wide-angle (W) and telephoto (T) positions.

10 **White balance sensor**
This is the sensor for the auto white balance adjustment. Be careful not to cover it.

11 **Microphone switch ❿**
To reduce wind noise, set to WIND.

12 **Built-in microphone**

13 **MIC jack and DC OUT (microphone power output) jack**
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

14 **🎧 (earphone) jack (mini)**

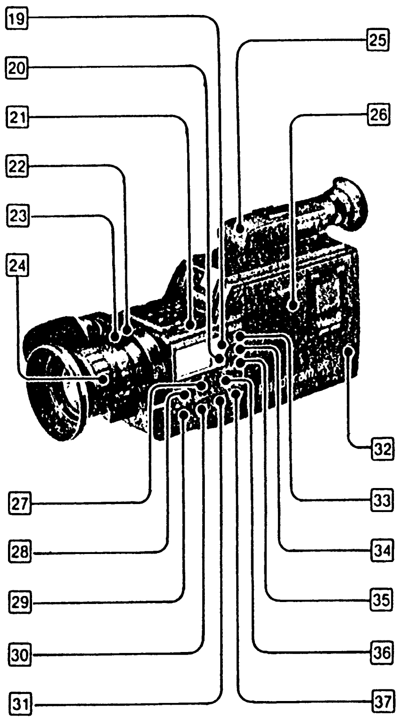
15 **Grip strap ❾**

16 **Tripod receptacle**
Attach an optional tripod.

17 **STANDBY switch ❿**
Before recording, slide this switch up.

18 **START/STOP button ❿**
Press to start or stop camera recording.

A-2



A-2

19 **DATA SET button ❿**
Used to set the date and time.

20 **ADJUST button ❿**
Used to set the date and time.

21 **EJECT (cassette eject) switch ❽**

22 **Macro set button ⓰**
Keeping this button depressed, move the manual zoom lever within the MACRO range for close-ups.

23 **Manual zoom lever ⓯**

24 **Focus ring ⓭**
For manual focusing, turn this ring to focus while looking through the viewfinder.
This ring will be turned automatically during auto focusing.

25 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

26 **Cassette compartment ❽**

27 **IRIS control ⓭**
Normally set to the center position (green mark).

28 **SHUTTER SPEED button ⓯**
Used to select the shutter speed.

29 **AUTO LOCK switch ❿**
Normally set to the left AUTO LOCK position (green mark).

30 **FOCUS button ⓭**
Used for manual focusing.

31 **WHITE BAL (white balance) button ⓭**
Used for manual balance adjustment.

32 **BATT (battery eject) knob ❼**

33 **ZERO MEM (zero memory) button ⓳ ⓴**
Used to memorize the counter zero point.

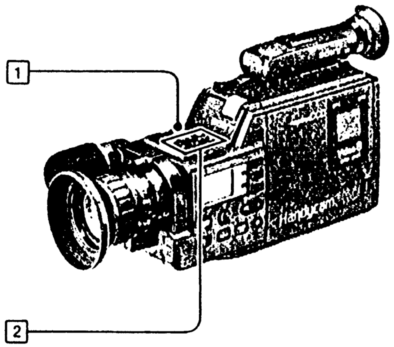
34 **RESET button ⓳**
Pess to reset the counter to zero.

35 **SELECT button ❿, ⓬**
Select the counter, date or time display.

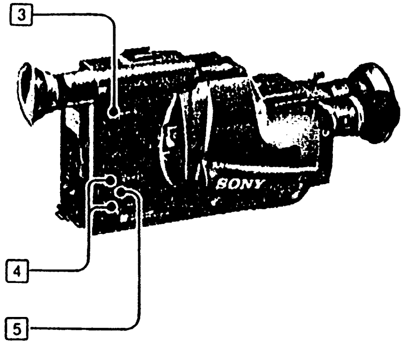
36 **EDITSEARCH button ⓬⓳⓴**

37 **⊜ (recording review) button ⓫**

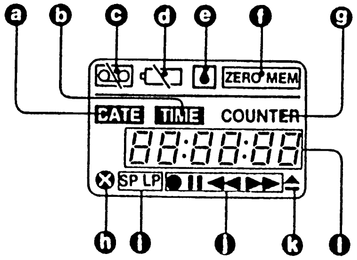
A-3



A-4



A-5



Video cassette recorder section and connectors

A-3

1 **POWER switch**
CAMERA: For camera recording.
PLAYER: For tape playback and tape editing.
OFF: To turn off the power.

2 **Tape transport buttons** ⑱
◀◀ FF (fast-forward), ◁ (playback), ▶▶ REW (rewind), ◀II (frame-by-frame/slow playback), ■ (stop), II (pause)

A-4

3 **REMOTE connector** (5-pin)
Connect an optional Remote Commander, editing controller, etc.

4 **AUDIO OUT/VIDEO OUT jacks** (phono) ⑯⑳

5 **RFU DC OUT jack** (special mini) ⑯
Connect the RFU-89EA/ASA RFU adaptor, etc.

A-5

Display window
ⓐ DATE mode indicator
ⓑ TIME mode indicator
ⓒ Lights steadily when no cassette is inserted. Blinks when the tape reaches its end during camera recording or when a recording is started with a cassette with its safety tab out inserted.
ⓓ Blinks when the battery is weak.
ⓔ Blinks when moisture has condensed inside the unit.
ⓕ Displayed when the ZERO MEM button is pressed.
ⓖ COUNTER mode indicator
ⓗ Blinks when the video heads have been contaminated.
ⓘ Tape speed indicator
ⓙ Tape operation mode indicators
● (recording), II (pause), ◀◀ (fast-forward), ▶▶ (rewind), ◀ (playback)
ⓚ Blinks when moisture has condensed on the tape, when the tape reaches its end during camera recording, etc. to indicate that the cassette should be removed.
ⓛ Tape counter, date or time indication

Power Sources and Cassette Care

Power Sources

Selection of Power Sources

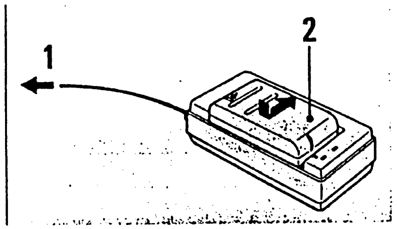
This manual shows the operations on one of the following power sources. For operation on other power sources, see the instruction manual furnished with the equipment to be used.

Place		Power source	Accessory to be used
	Indoors	House current	AC power adaptor AC-V30 or AC-V55 (page 8)
	Outdoors	Battery pack	Battery pack NP-55 or NP-77 (page 7) Battery case EBP-55 (page 8)
	In the car	12 V or 24 V car battery	DC pack DCP-55 (page 8)

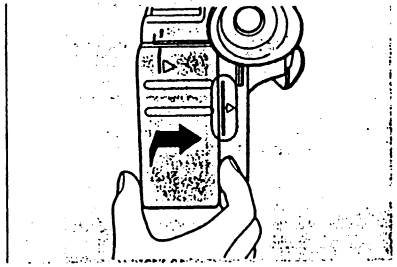
Notes on power source

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- If a power source is disconnected or the CHARGE button on the AC power adaptor (only for the AC-V55) is pressed in rewind mode, the ⏏ indication may blink in the display window and the tape may not run. In this case, remove the cassette and insert it again.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not be used, keep it in its case.

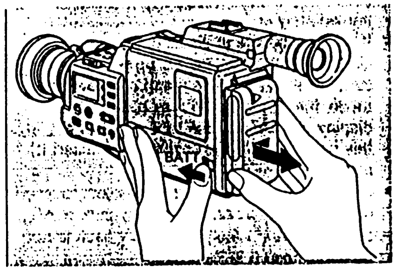
B-1



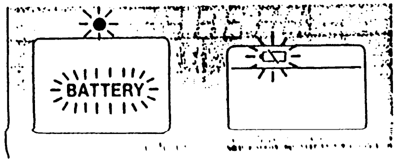
B-2



B-3



B-4



Battery Pack — NP-55 or NP-77

First, charge the battery pack. B-1
Use the AC-V30 AC power adaptor.
The charging time is about 1 hour for an NP-55 battery pack, or about 2 hours for an NP-77 battery pack.

1 Connect the AC-V30 to a wall outlet.
2 Attach the battery pack to the AC-V30.
Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack, slide it as illustrated.

To attach the battery pack to the video camera recorder B-2
Align the right side of battery pack with the line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

To remove the battery pack B-3
While pressing the BATT switch in the arrow direction, slide and pull out the battery pack as illustrated.

Battery life
A fully-charged NP-55 battery pack provides approximately 40 minutes of continuous camera recording, and an NP-77 provides approximately 80 minutes of continuous camera recording.

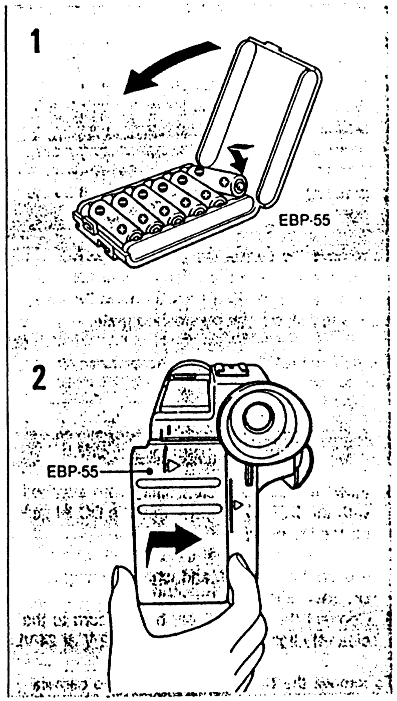
NOTES
- The video camera recorder consumes power even in the recording pause mode. Therefore, turn off the unit by sliding the STANDBY switch when you are shooting. For every hour's worth of tape you shoot, plan to use 2 to 3 hours' worth of battery power. The use of the NP-77 is recommended for an extended use.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

WHEN THE BATTERY BECOMES WEAK B-4
The BATTERY indication and red lamp blink in the viewfinder and the ▭ indication blinks in the display window.
Replace the battery pack with the fully charged one.

USING THE NP-22 BATTERY PACK
A fully-charged NP-22 battery pack can operate this unit for approximately 60 minutes. For using the NP-22, an optional NPA-22 battery adaptor is necessary.

OPTIONAL ACCESSORIES FOR CHARGING
- **AC-V55 AC power adaptor**
  Two battery packs can be charged simultaneously.
- **BCA-70 or BCA-80 battery charge adaptor, ACP-88 AC pack and NPA-55 battery adaptor**
  For charging, insert an NP-55 into the NPA-55.

B-5



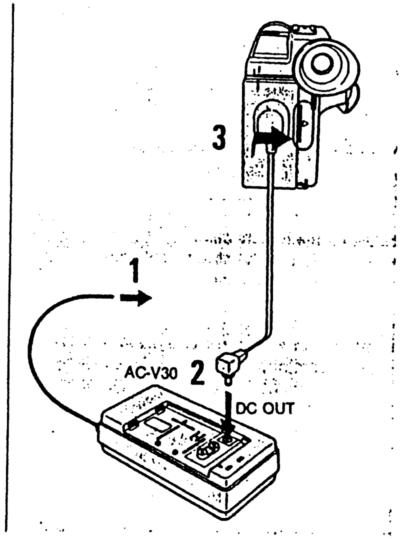
Battery Case EBP-55 B-5

1 Insert the six R6 (size AA) alkaline batteries into the battery case.
2 Align the right side of the battery case with the line on the recorder, and while pressing the battery case, slide it to the right.

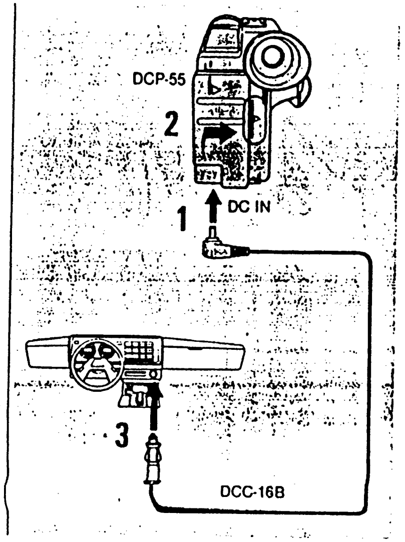
To remove the battery case
While pressing the BATT knob on the recorder, slide and pull out the battery case.

Notes on the battery case
- Be sure to use the alkaline batteries.
- The battery case cannot be used in a cold place.
- The ▭ indication may not blink when the batteries in the battery case become weak, as the voltage of the battery lowers suddenly. If the cassette compartment does not open, replace the batteries.

B-6



B-7



House Current — Using the AC-V30 AC Power Adaptor B-6

1 Connect the AC power adaptor to a wall outlet.
2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3 Align the right side of the connecting plate with the line on the recorder, and while pressing the connecting plate, slide it to the right.

To remove the connecting plate for the AC power adaptor from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the connecting plate.

The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

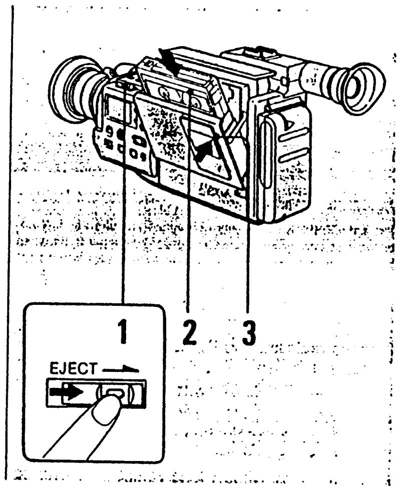
Car Battery — Using the DC Pack B-7

1 Insert the DCC-16B car battery cord supplied with the DCP-55 DC pack into the DC IN jack on the DC pack.
2 Align the right side of the DC pack with the line on the recorder, and while pressing the DC pack, slide it to the right.
3 Connect the DCC-16B car battery cord to the cigarette lighter socket of a car (12 V or 24 V).

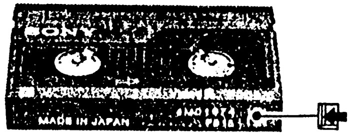
To remove the DC pack from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the DC pack.

The optional AC-V55 AC power adaptor and the DCC-16AE car battery cord can also be used to operate this recorder on a 12V or 24V car battery.

C-1



C-2



Cassette Care

Cassette Insertion C-1

Make sure that a power source is connected to the unit.

1 Press and slide the EJECT switch.
The cassette holder will open.
2 Insert a cassette with the window outward and the arrow mark down.
3 Push the PUSH mark to close the cassette holder.

Cassette Ejection

1 Connect a power source.
2 Press and slide the EJECT switch.
3 Take the cassette out and push the PUSH mark to close the cassette holder.

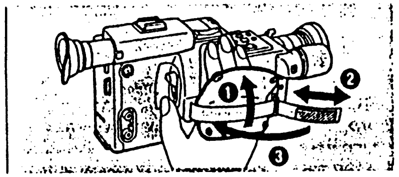
NOTES
- While the upper lid of the cassette compartment is rising, never pull or push it forcibly.
- When the cassette holder is pressed to close, the upper lid of the cassette compartment will automatically lower. Be careful not to trap your hand between the cassette holder and the lid. To open the cassette holder, press and slide the EJECT switch.
- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, if the tab is out or in, etc.
- To record from the beginning of the tape, run the video camera recorder for about 15 seconds at the beginning of a cassette before recording. It will avoid missing the starting point during playback on a video cassette recorder.

The Tab on the Cassette C-2

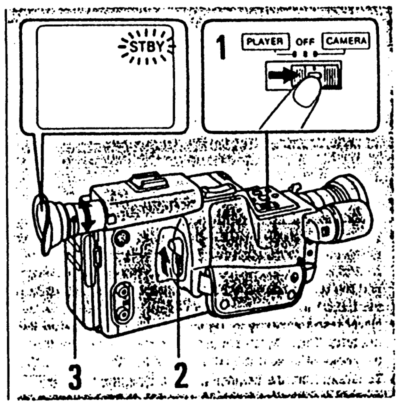
(The photo is of Sony type.)

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased. To avoid erasing a recording unintentionally, slide the tab out to cover the opening.
When the tab is out, a recording cannot be made. To re-record on a cassette, slide the tab in.

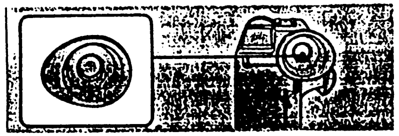
D-1



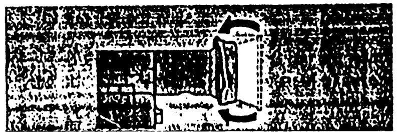
D-2



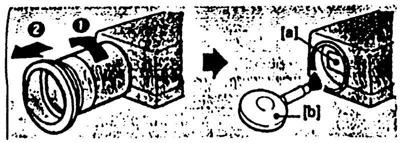
D-3



D-4



D-5



Camera Operation

Preparations for Camera Recording

Grip Strap Adjustment D-1

Adjust the length of the grip strap so that your fingers can manipulate the STANDBY switch, START/STOP button and power zoom button.

Viewfinder Adjustment

Viewfinder lens adjustment D-2

This adjustment is necessary only when you use the camera for the first time or after another person has used it, because the distance of optimum vision varies from person to person.

Make sure that the lens cap is removed.

1 Press and slide the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
The unit will be set to recording pause mode and the STBY indication will appear on the viewfinder screen.
3 Adjust the viewfinder lens adjustment lever so that the indication on the viewfinder screen comes into sharp focus.

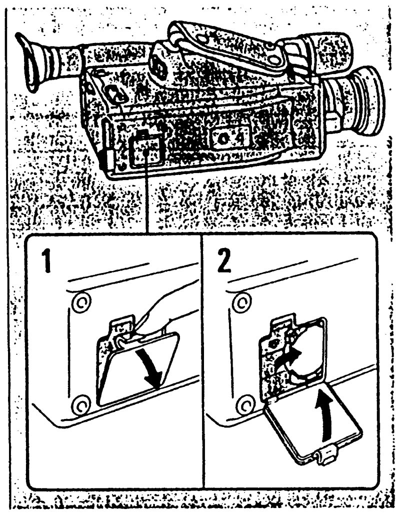
NOTE
When the power is turned on, irregular indications may appear on the viewfinder screen. In this case, set the POWER switch to OFF, and set it to CAMERA again.

To view with your left eye D-3
Pull to detach the rubber eyecup and reattach it as illustrated.

To view through the glasses D-4
Fold the rubber eyecup outward.

To remove the dust inside the viewfinder D-5
Detach the eyecup and clean the surface of the cathode ray tube [a] with a camera blower [b] (commercially available).

D-6



Lithium Battery D-6

Before operating the unit for the first time, install the supplied lithium battery to activate the clock.

1 Open the cover of the lithium battery compartment on the bottom.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

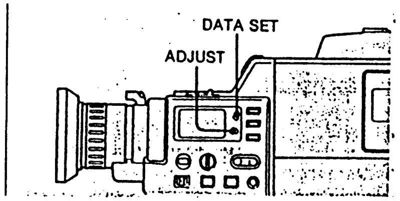
To remove the lithium battery
Press the side of the battery in the direction as indicated for installation.

LITHIUM BATTERY LIFE
Approximately 2 years in normal operation.
When the lithium battery becomes weak, the 🔋 indication and the DATE or TIME indication will blink in the display window while the date or time is displayed.
In this case, replace the battery with a Sony CR2025 lithium battery or equivalent. Use of another battery may present a risk of fire or explosion.

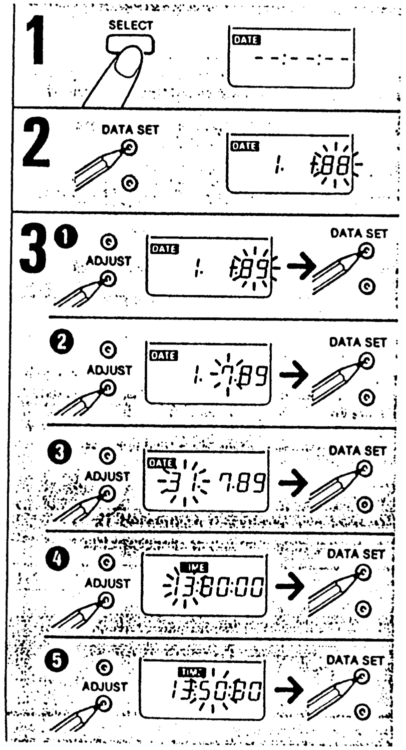
NOTES ON LITHIUM BATTERY
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.
- Even when lithum battery is installed, the display window will not light unless power is supplied to the unit.

WARNING
Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

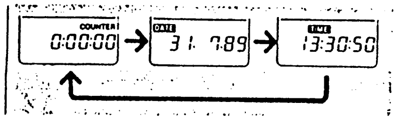
D-7


DATA SET
ADJUST

D-8


1
SELECT
DATE
--:--:--
2
DATA SET
DATE
1. 1.88
3❶
ADJUST
DATE
1. 1.89
DATA SET
❷
ADJUST
DATE
1. 7.89
DATA SET
❸
ADJUST
DATE
31. 7.89
DATA SET
❹
ADJUST
TIME
13:00:00
DATA SET
❺
ADJUST
TIME
13:50:00
DATA SET

D-9


COUNTER
0:00:00
DATE
31. 7.89
TIME
13:30:50

Date/Time Setting D-7

Make sure that the lithium battery is installed.

1. Press the SELECT button. The DATE indication will appear on the viewfinder screen.
2. Press the DATA SET button for 2 or 3 seconds to display the preset date (1.1.88).
3. Adjust the year, month, day, hour and minute in sequence, following the illustration D-8. First adjust the blinking digits with the ADJUST button, and then press the DATA SET button.
   ❶ Year: 88 = 1988, 00 = 2000 ❷ Month
   ❸ Day ❹ Hour ❺ Minute
   After adjusting the minute digits, press the DATA SET button at the same time with an announced time signal.
   The clock starts operating.
4. To reset to the counter mode, press the SELECT button.

There is no need to readjust the date and time as long as the lithium battery remains.

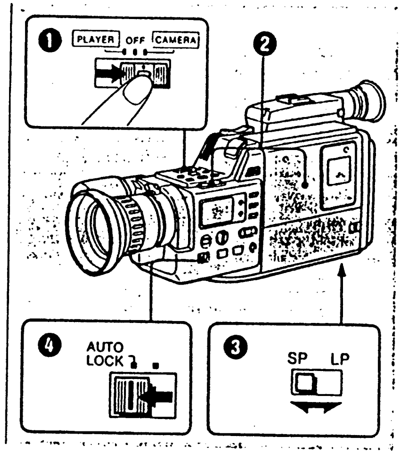
THE ADJUST BUTTON CAN BE PRESSED IN TWO WAYS:
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

To change the adjusted digits during setting
1. Press the DATA SET button repeatedly until the clock starts operating.
2. Press the DATA SET button for 2 or 3 seconds so that the year digits blink.
3. Press the DATA SET button repeatedly until the digits to be changed blink.
4. Change the digits with the ADJUST button and then press the DATA SET button.

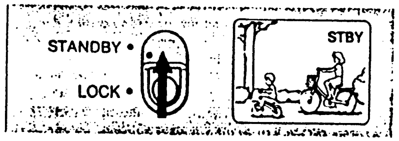
To readjust the date or time after the setting has been completed
1. Press the SELECT button to display the date or time.
2. Press the DATA SET button for 2 or 3 seconds so that the year digits blink.
3. Press the DATA SET button repeatedly until the digits to be changed blink.
4. Change the digits with the ADJUST button and press the DATA SET button repeatedly until the clock starts operating.

To check the date and time D-9
Each time the SELECT button is pressed, the display changes as follows:
Counter → Date → Time → Counter...

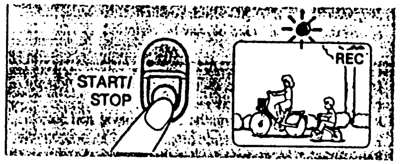
E-1


❶
PLAYER OFF CAMERA
❷
❹
AUTO LOCK
❸
SP LP

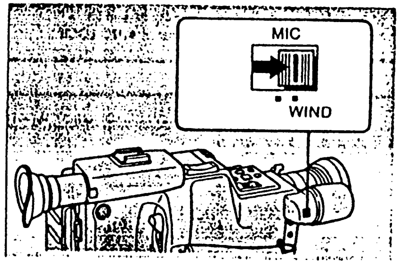
E-2


STANDBY
LOCK
STBY

E-3


START/STOP
REC

E-4



Easy Camera Recording with Automatic Adjustment

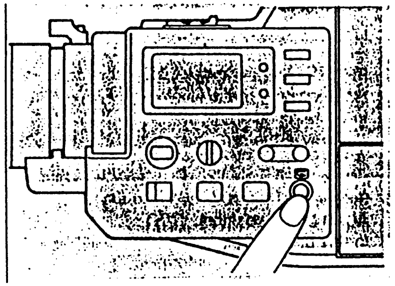
Camera Recording

1. Press and slide the POWER switch to CAMERA and insert a cassette. E-1
2. Set the recording mode/EDIT switch to LP or SP, according to the length of the programme to be recorded. E-1
   The recording time of a cassette in the LP mode is twice as long as that in the SP mode.
3. Set the AUTO LOCK switch to the left (green AUTO LOCK position). E-1
   In this position, the focus, white balance and iris will be adjusted automatically.
4. Slide the STANDBY switch up. E-2
   The unit will be set to recording pause mode.
5. To start recording, press the START/STOP button. E-3
6. To stop recording, press the START/STOP button.
   The unit will be set to recording pause mode.

To reduce Wind Noise During Recording E-4

Set the microphone switch to WIND to reduce wind noise.

E-5



To check the last scene of the previous recording

Press the ⊜ button momentarily. E-5

The last few seconds of the recorded scene are played back in reverse, and then played back normally. Then the unit will enter recording pause mode.

After recording

Slide the STANDBY switch down and set the POWER switch to OFF.

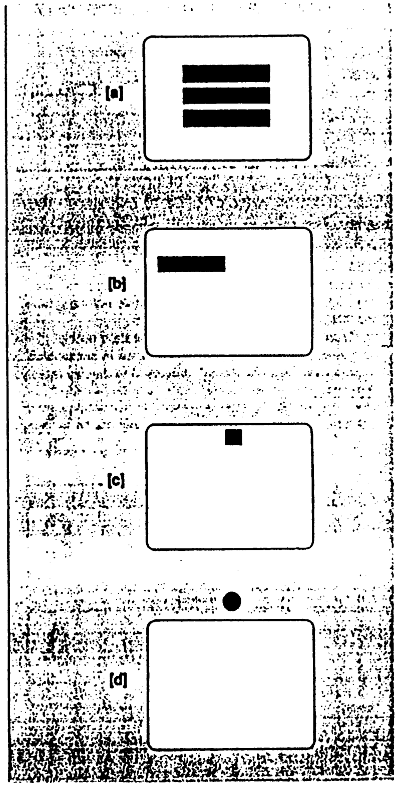
NOTES ON RECORDING

- Do not let the sun shine directly into the eyecup of the viewfinder, because the plastic inside the viewfinder may be damaged.
- If you leave the unit in the recording pause mode for 5 minutes or more, the power will be automatically turned off.
  To resume recording pause mode, slide the STANDBY switch down and slide it up again.
- Avoid mechanical shock or shaking of the unit in recording pause mode. Otherwise, smooth recording will not be obtained when recording is resumed.
- When the POWER switch is moved during recording, the tape will stop.
- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.
- When playing back a tape recorded with this unit on a VTR equipped with PCM function, set the audio monitor selector on the VTR to the standard position.
- When a new recording is made with this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

NOTES ON AUTOMATIC ADJUSTMENT

- During camera recording, do not touch the focus ring or cover the white balance sensor.
- If there is insufficient light, the auto focusing and auto white balance do not operate properly. Add an appropriate light.
- The camera recording with automatic adjustment may not produce optimum results under certain conditions or ambient lighting. In this case, manually adjust the focus, white balance and iris. See pages 13 and 14.
- The shutter speed is fixed at normal in AUTO LOCK position.

E-6

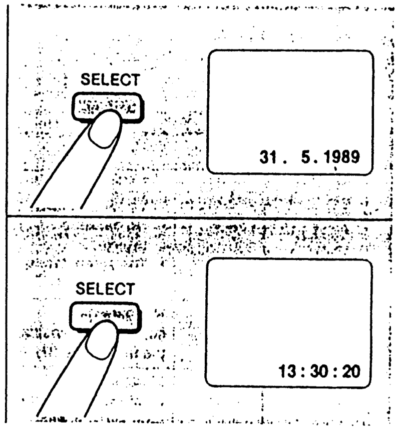


Caution Indicators on the Viewfinder Screen E-6

A caution indicator will be displayed on the viewfinder screen.

[a]	BATTERY	Blinks, then goes out.	The battery is weak.
	TAPE END	Blinks.	The tape reaches its end.
	CASSETTE	Blinks.	• No cassette inserted. • The safety tab is out. (page 8)
	DEW	Blinks.	Moisture condensation inside the unit. (page 21)
	CAUTION	Blinks.	Moisture condensation on the tape surface, etc. (page 21)
[b]	INDOOR	Lights.	The WHITE BAL button is set for indoor recording. (page 14)
	OUTDOOR	Lights.	The WHITE BAL button is set for outdoor recording. (page 14)
[c]	White mark	Lights.	Manual focusing mode is set. (page 13)
		Blinks.	Auto focusing does not work correctly. (page 13)
[d]	Red lamp	Lights.	During recording.
		Blinks.	Battery is weak.

E-7



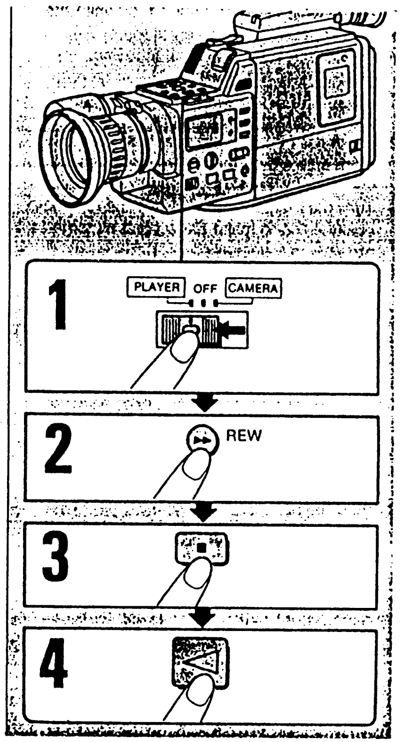
To Record the Date or Time E-7

During camera recording or in recording pause mode, press the SELECT button once or twice to display the date or time on the viewfinder screen.
If the unit is set to recording mode, the date or time being displayed will be recorded together with the picture.

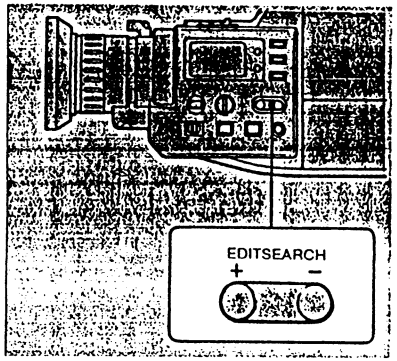
To stop recording the date or time, press the SELECT button twice or once to extinguish the display. The picture recording will continue.

NOTES
- The date or time can be recorded only during a camera recording. To insert the date or time while editing a tape, see "INSERT RECORDING" on page 20.
- To display the time or to extinguish the date during recording, press the SELECT button twice in succession to pass over the unnecessary date or time display rapidly. Otherwise, the unnecessary display will be recorded. When the SELECT button is pressed in succession, such a display will appear momentarily but will not be recorded.

E-8



E-9



Monitoring the Playback Picture on the Viewfinder Screen E-8

1 Set the POWER switch to PLAYER.
2 Press the ▶▶ button to rewind the tape.
3 Press the ■ button to stop the tape.
4 Press the ◁ button to start playback.
  The playback picture will appear on the viewfinder screen.

To stop the playback, press the ■ button.

To monitor the playback sound, connect an earphone to the 🎧 jack.

NOTE
The playback picture and sound may be affected in a moving vehicle.

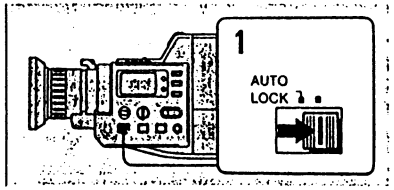
Smooth Recording

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as follows.

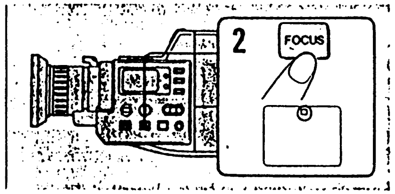
1 Select the same recording mode with the recording mode/EDIT switch in the lithium battery compartment as was used for the already recorded portion.
2 Set the POWER switch to CAMERA.
3 Insert a cassette.
4 Slide the STANDBY switch up.
5 Locate the point from which the recording is to begin again by monitoring the picture on the viewfinder screen. E-9
  ❶ Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "−" side to reverse the picture.
  ❷ At the desired point, release the EDITSEARCH button.
  The unit will be set to recording pause mode after 2 seconds.
6 Press the START/STOP button to start recording.

NOTES
- Smooth recording cannot be obtained if two recordings are carried out on different recorders, on this unit and another recorder.
- If the picture is monitored on a TV or video monitor, it may be distorted or appear in monochrome while the EDITSEARCH "−" button is pressed.

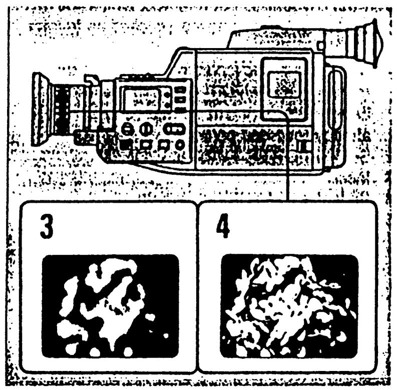
F-1



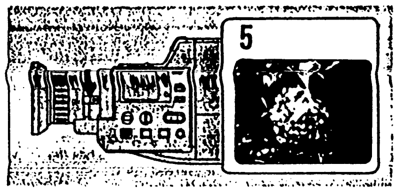
F-2



F-3



F-4



Manual Focusing

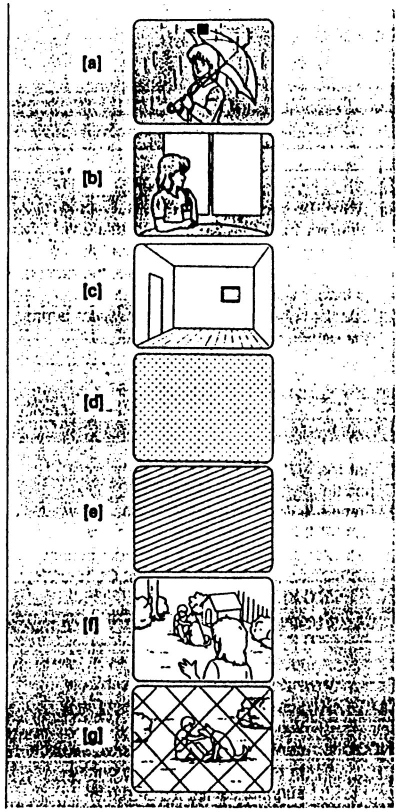
Auto focusing will be activated for almost any subject centered in the viewfinder. However, for some subjects listed on page 13, or when the white mark blinks on the center top of the viewfinder screen, use manual focusing.

1 Set the AUTO LOCK switch to the right position (white mark). F-1
2 Press the FOCUS button so that the white mark appears on the center top of the viewfinder screen. F-2
3 Turn the manual zoom lever to the telephoto position (72) to make the subject as large as possible in the viewfinder. F-3
4 Turn the focus ring to achieve sharp focus. F-3
5 Set the desired shot length using the manual zoom lever. F-4

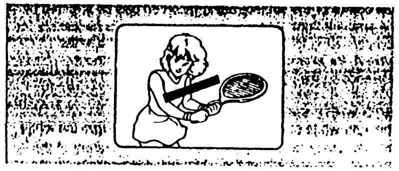
SOME HELPFUL HINTS

- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus regardless of movement by setting the zoom lever to 12 and the focus ring to 2 m.
- The figures on the focus ring indicate the distance between the subject and the ϕ mark on the side of the recorder body.
- When shooting in low light situations, such as indoors, the depth of field for proper focus becomes very shallow. For best results, set the focus in telephoto, and shoot at wide angles.

F-5



F-6



Difficult Conditions for Auto Focusing F-5

[a] Insufficient light
[b] Too much bright light behind the subject
[c] Subjects with flat colours and less contrast—wall, sky, etc.
[d] Finely detailed repetitive patterns
[e] Slant stripes
[f] When the distance between subjects at the center is extreme (e.g. one subject is close, the other is away)
[g] Subjects beyond screens, nets, etc. or when another subject passes across the camera

Other Uses of Manual Focusing

- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear (When the AUTO LOCK switch is set to the green mark position, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For close-up shooting (See page 16)
- When shooting in a hot palce.

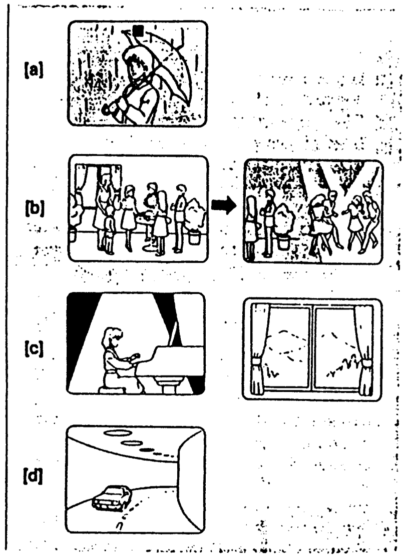
TCL AUTO FOCUSING SYSTEM

The TCL (Through Camera Lens) auto focusing system incorporated in this unit utilizes high-precision sensors to determine picture contrast at the center of the viewfinder screen (the portion marked with the blue bar in the illustration) and adjust focus accordingly for automatic, highly accurate focusing. F-6

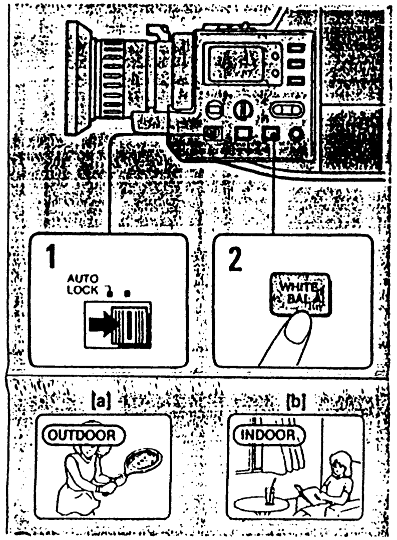
NOTE

It may take several seconds to get focus when the camera is rapidly panned from a near subject to a distant subject with less contrast.

G-1



G-2



Manual White Balance

In most cases, the auto white balance function of this unit adjusts the white balance automatically. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

Difficult Conditions for Auto White Balance G-1

[a] Insufficient light
[b] When lighting conditions change quickly
[c] When the light source for the subject is different from that illuminating this unit e.g. when the subject is in a spotlight, or when the subject is outdoors but the camera is indoors, etc.
[d] Special light sources such as natrium lamps, the setting sun, etc.

To Adjust the White Balance Manually G-2

1 Set the AUTO LOCK switch to the right position (white mark).
2 Press the WHITE BAL button once or twice so that the appropriate white balance indicator appears on the viewfinder screen.
   [a] To record subjects outdoors: OUTDOOR (5,800 K)
   [b] To record subjects indoors: INDOOR (3,200 K)

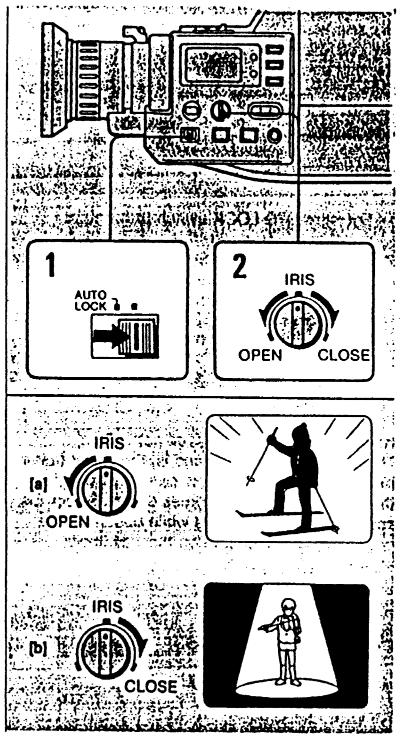
Recommended setting for various subjects

OUTDOOR:	sunset, fireworks, subjects in a sunny window, etc.
INDOOR:	candle flames in darkness, subjects in the spotlight, scenes before sunrise, subjects in a tunnel (illuminated by natrium lamps), neons, etc.

WHAT IS THE WHITE BALANCE?
The colour of the subject being recorded can be affected by the ambient light. White balance adjustment is necessary for compensating for this colour variation, so that a white subject, for example, can be recorded white without reference to the light source.

AUTO WHITE BALANCE SYSTEM
The auto white balance system of this unit utilizes the white balance sensor to determine the colour temperature of the ambient light and adjust the white balance accordingly. As the ambient lighting condition changes gradually, such as in twilight, the white balance will be readjusted automatically. As the sensor is built in the unit, however, optimum white balance adjustment cannot be obtained if the subject and this unit are under different lighting conditions.

H



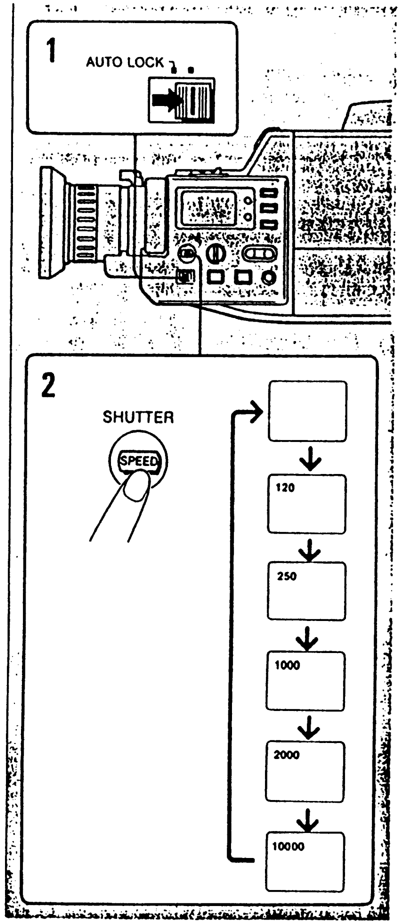
Manual Iris Adjustment H

The iris is adjusted automatically when the AUTO LOCK switch is set to AUTO LOCK. When shooting a scene with strong contrast, adjust the iris manually.

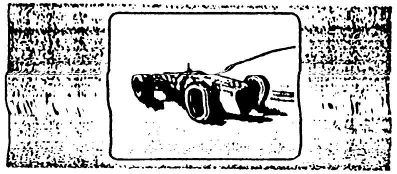
1 Set the AUTO LOCK switch to the right position (white mark).
2 Adjust the IRIS control.
   [a] When backlit shot results in the subject being too dark: **Turn IRIS toward OPEN.**
   [b] When a subject is too bright against a dark background: **Turn IRIS toward CLOSE.**

After shooting that particular scene, set the IRIS control to the center position (green mark).

I-1



I-2



Shutter Speed Adjustment

When the shutter speed is fast, subjects moving at high speed, such as a moving golf ball or tennis ball, can be recorded clearly.
Six shutter speeds can be selected on this unit: 1/10000, 1/2000, 1/1000, 1/250, 1/120, and 1/50 (normal speed).
Select the appropriate shutter speed according to the subject and the ambient lighting conditions.

To Select the Shutter Speed I-1

1 Set the AUTO LOCK switch to the right position (white mark).
2 Press the SHUTTER SPEED button repeatedly until the desired shutter speed indication appears on the viewfinder screen.
Each time the SHUTTER SPEED button is pressed, the indication changes:
No indication → 120 → 250 → 1000 → 2000 → 10000
(1/50) (1/120) (1/250) (1/1000) (1/2000) (1/1000

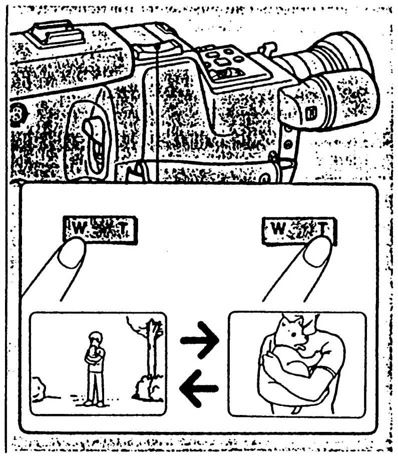
Recommended shutter speed settings
The faster the shutter speed is, the better faster movements of the subjects can be followed but the recorded picture becomes darker. Select the appropriate shutter speed while observing the brightness of the picture on the viewfinder screen.

Location	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/10000) • Recording the skiers	1/10000 or 1/2000
• Slightly overcast outdoors • Roofed golf practice ground	1/1000
• Cloudy outdoors • Indoor tennis courts	1/250 or 1/120

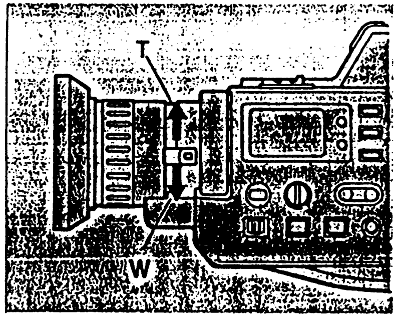
A noiseless still, frame-by-frame and slow pictures are obtained when the picture recorded with the faster shutter speed is played back. This is convenient for checking your golf or tennis form, etc.

NOTES
- When shooting at the shutter speed of 1/10000 on locations where there is not enough light, the whole screen may become greenish. This is not a failure of the unit . In this case, set the shutter speed to slower speeds.
- When shooting under flourescent lamps, mercury lamps or natrium lamps, flickers may occur and the color of the subjects may change.
- When the shutter speed is changed during a camera recording of a TV screen, the brighness of the recorded picture may vary in a single image. I-2
- When a very bright object is shot with a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen. This is not a failure of the unit.

J-1



J-2



Zooming

Either power zoom or manual zoom can be used to change the size of the subject in the scene.

Power Zoom J-1

— for smooth and constant zooming

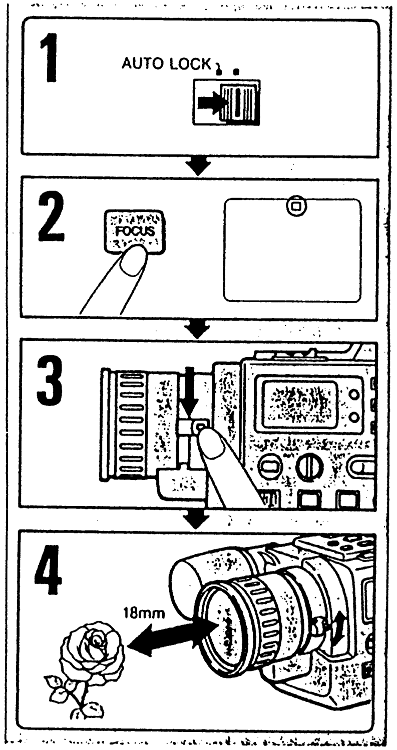
Press the "T" side of the power zoom button for telephoto (T) and the "W" side for wide-angle (W). The zoom ring will move automatically.

Manual Zoom J-2

— to create a dramatic effect

Turn the manual zoom lever upward for telephoto (T) and downward for wide-angle (W).

K



Close-ups (Macro) K

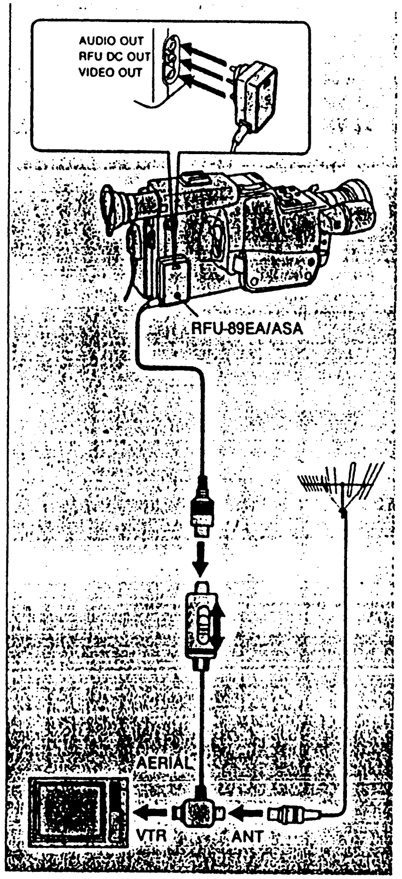
Use of the macro function allows the camera to approach the subject almost to the lens, so that even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

1. Set the AUTO LOCK switch to the right position (white mark).
2. Press the FOCUS button so that the white mark appears on the center top of the viewfinder screen.
3. While keeping the green macro set button pressed, turn the manual zoom lever to the MACRO position.
4. Focus by turning the manual zoom lever within the MACRO range.

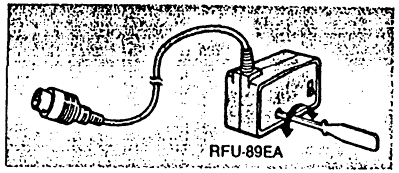
   The recorder can move to a subject as close as 18 mm (23/32 in.) from the lens surface.

NOTES ON MACRO SHOOTING
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.
- Zooming is not possible during macro shooting. To change the size of the subject, move the video camera recorder closer or further away from it.
- Auto focusing does not function during macro shooting.
- When removing and attaching the lens hood, hold the focus ring.

L-1



L-2



Playback of the Recorded Tape

Connecting a TV

Connecting a TV without audio/video input connectors L-1

1. Connect the RFU adaptor to the CCD-V95E.
2. Connect the aerial, CCD-V95E and TV to the aerial selector (supplied with the unit).
   Use a 75-ohm coaxial cable for aerial connection.
3. RFU-89EA only: Set the I/G selector according to the TV system of your country.
4. Adjust one of the TV programme positions to receive the signal from the video camera recorder. See "Adjusting the TV" below.
5. Set the selector switch on the aerial selector as follows:

For viewing a playback picture → VTR
For viewing TV programmes → ANT

6. Select the same channel on the TV as that selected in adjusting the TV.

Adjusting the TV with the RFU-89EA

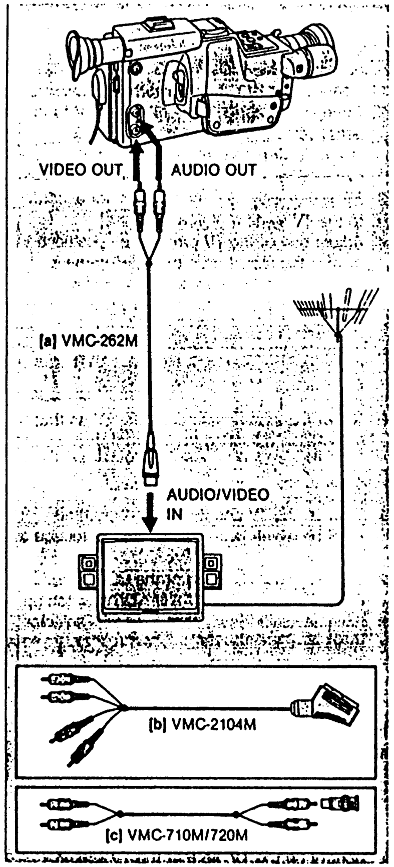
1. Turn on the TV and select a programme position which is not being used to receive a TV station.
2. Set the POWER switch of the CCD-V95E to CAMERA and slide the STANDBY switch up.
3. Set the selector switch of the aerial selector to VTR.
4. Tune the TV until you see the picture and hear the sound from the CCD-V95E.

If the playback picture is not free of disturbance
1. Set the selector switch of the aerial selector to ANT.
2. Adjust the programme position of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound is heard.
3. Set the selector switch of the aerial selector to VTR.
4. Slowly turn the RF channel of the RFU adaptor with the supplied screwdriver, until the picture from the CCD-V95E becomes clear. L-2
   Now the TV adjustment is complete.

Adjusting the TV with the RFU-89ASA

Select the CHANNEL selector on the RFU adaptor to 0 CH or 1 CH, whichever is not active in your area, and select the same channel on the TV.

L-3

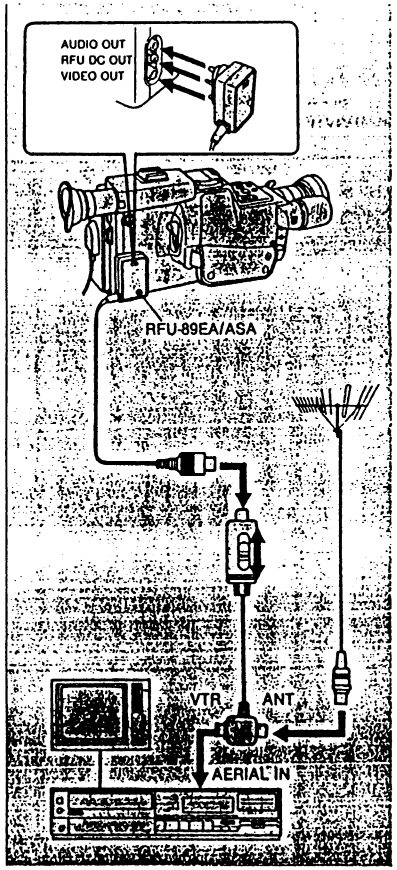


Connecting a TV (or colour monitor) equipped with audio/video input connectors L-3

Leave the TV aerial cable connected to the TV.

1 Connect the CCD-V95E to the TV using an optional connecting cable to match the connectors on the TV.
  [a] VMC-262M: to a 6-pin DIN connector
  [b] VMC-2104M: to a 21-pin connector (EUROCONNECTOR)
  [c] VMC-710M/720M: to phono and BNC-type connectors
2 Set the TV/VIDEO selector button on the TV as follows:

For viewing a playback picture → VIDEO
For viewing TV programmes → TV



Connecting a TV connected to another VTR without an input selector L-4

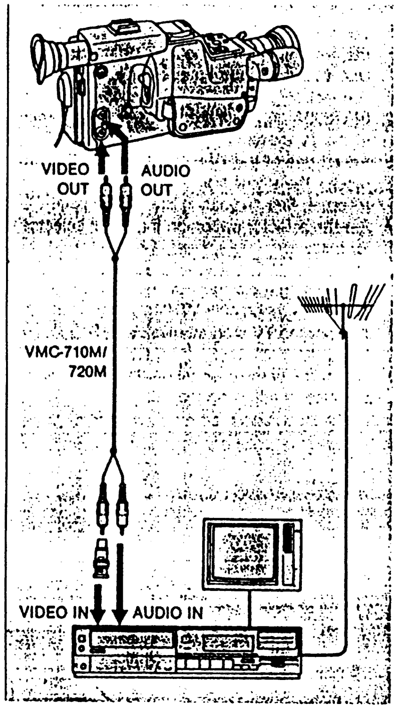
Connect the RFU adaptor to the CCD-V95E.

1 Connect the RFU adaptor, TV, and the VTR to the aerial selector (supplied with the unit). Use a 75-ohm coaxial cable for aerial connection.
2 RFU-89EA only: Set the I/G selector according to the TV system of your country.
3 Adjust one of the TV programme positions to receive the signal from the video camera recorder. See "Adjusting the TV" on page 16.
4 Set the selector switch on the aerial selector as follows:

For viewing a playback picture of the video camera recorder → VTR
For viewing TV programmes → ANT

5 Select the same channel on the TV as that selected in adjusting the TV.

L-5



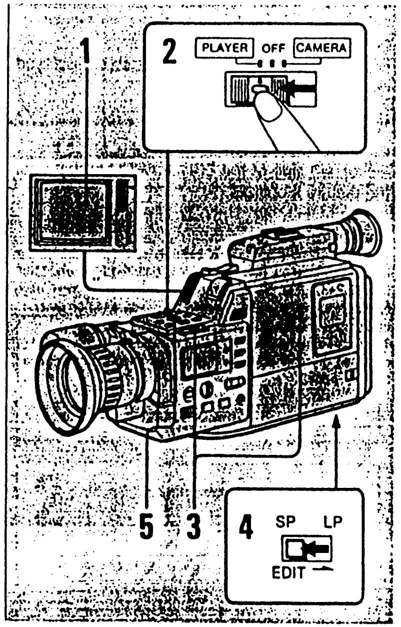
Connecting a TV connected to another VTR with an input selector L-5

Use the optional VMC-710M/720M connecting cord.

Set the selectors on the VTR as follows:
Input selector → LINE
TV/VTR selector → VTR

NOTE
When the VTR to be connected has stereo audio inputs, use the optional VMC-910MS/920MS connecting cord.

M-1



To Play Back M-1

1 Turn on the TV or colour monitor, and select the channel for the video camera recorder or set the TV/VIDEO select button to VIDEO.
2 Set the POWER switch to PLAYER.
3 Insert a cassette.
4 Set the recording mode/EDIT switch in the lithium battery compartment in the opposite direction to the arrow (EDIT OFF).
5 Press the ◁ button. Playback begins.
The unit detects the recorded mode of the tape, and adjusts the tape speed automatically.

To stop playback, press the ■ button.

When the tape comes to its end, the unit is automatically set to stop mode.

Various Playback Modes

To obtain a still picture
Press the ❚❚ button during playback. To resume normal playback, press the ◁ button or press the ❚❚ button again.

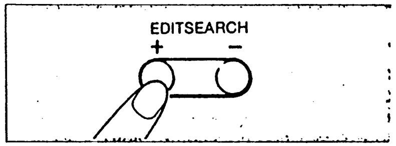
When the pause mode lasts for more than approximately 5 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

Frame-by-frame playback
Press the ◀❚❚ button in still picture mode.
If the ◀❚❚ button is kept depressed, a slow motion picture at 1/10 normal speed is obtained. To resume normal playback, press the ◁ button.

To view the picture at high speed
Keep pressing the ◀◀ (fast-forward) or ▶▶ (rewind) button during playback. Release the button for normal playback.

NOTES
- Streaks will appear in high-speed playback mode. The sound will be muted in the still picture, frame-by-frame playback and high-speed playback modes.
- When a tape is recorded in SP mode, a still picture, frame-by-frame picture, slow motion picture and high-speed picture may be noisy with many streaks and become black and white.
  Streaks will be wider than those of an LP-recorded tape.
- If the position of the POWER switch is changed during playback, the tape will stop.
- If the POWER switch is slid to CAMERA, the unit will be set to recording pause mode.

M-2

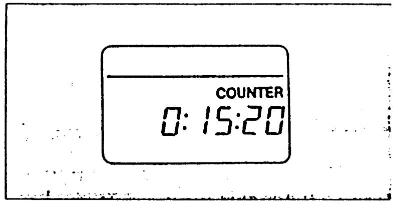


To adjust the frame-by-frame and slow playback pictures M-2
In slow playback mode, press the "+" or "–" side of the EDITSEARCH button until a clear picture is obtained.
Repeat adjusting until a still picture is displayed clearest.

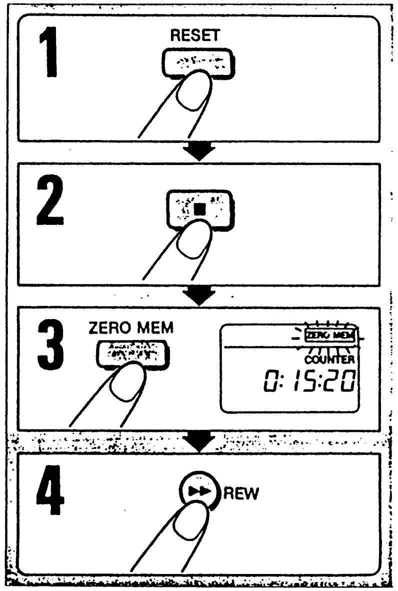
To adjust the still picture
If the still picture appears to shake, press the "+" or "–" side of the EDITSEARCH button until the picture stabilizes.

NOTE
The adjustment is retained in memory as long as the lithium battery is installed. Readjustment is only required when the tape speed, LP or SP, is changed, when the equipment used for playback is changed or when tapes recorded on other equipment are played back on this unit.
The noise may not be eliminated completely when a tape recorded on other equipment is played back in still or slow picture mode.

N-1



N-2



Use of the Tape Counter

During recording or playback in SP mode, the digits on the counter indicate the actual recording or playback time. In LP mode, the counter counts approximately half the actual recording or playback time.
E.g. When the counter indicates "0:15:20" during playback of an LP-recorded tape, the tape was played back for approximately 30 minutes 40 seconds from the counter zero position. N-1

The counter reading is the same as above in rewind and fast-forward modes, and also in the display window on the optional RM-94 Remote Commander and RM-E100V editing controller.

To Index the Whole Tape

Press the RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

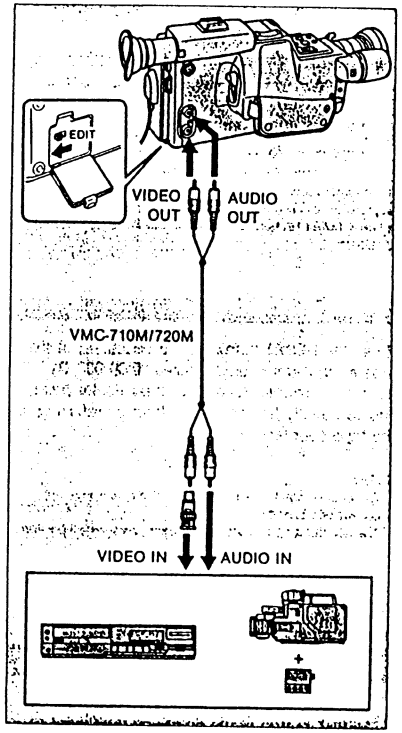
NOTES
- The counter reading and the point of the tape may not correspond exactly.
- The counter also operates for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast-forward and rewind operations or after playing back in slow mode for a long time.

To Return to a Pre-registered Point N-2

1 During recording or playback, press the RESET button at the point you later want to locate.
2 Press the ■ button when the recording or playback has finished.
3 Press the ZERO MEM button. The "ZERO MEM" indicator will blink in the display window.
4 Press the ▶▶ or ◀◀ button.
The tape will be rewound or sent forward and stop automatically when the counter reaches approximately zero.

NOTES
- The ZERO MEM button does not function during recording or playback mode.
- Be sure to press the ZERO MEM button when the tape is stopped.
- The ZERO MEM mode is cancelled automatically once the tape is rewound or sent forward to zero.

O



Editing O

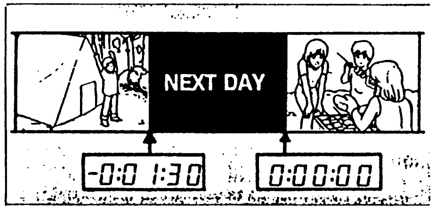
You can edit a tape from the CCD-V95E to another VTR.

1 Set the POWER switch on the CCD-V95E to PLAYER.
2 Slide the EDIT switch in the lithium battery compartment in the arrow direction ("EDIT" position).
3 Start playback on the CCD-V95E.
4 Start recording on the other VTR.

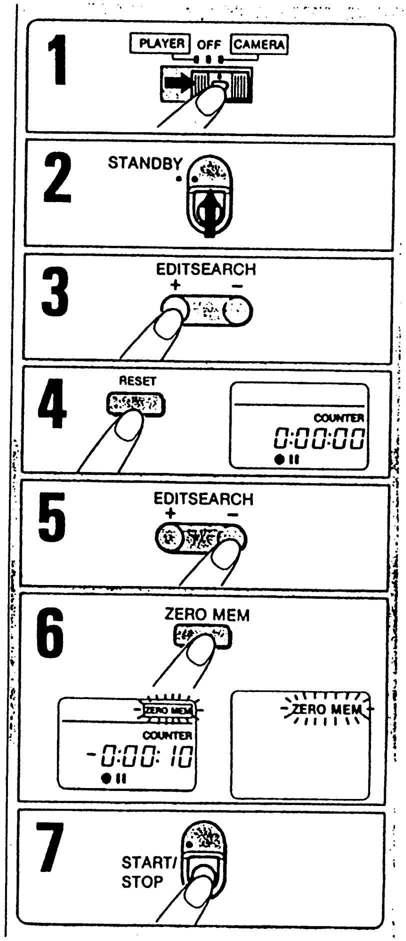
Function of the EDIT switch
Slide this switch in the arrow direction whenever you edit tapes. Signal loss that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.
When recording in the SP mode or playing back normally, keep this switch in the opposite position.

The optional RM-E100V video editing controller allows easier editing between two units.

P-1



P-2



Insert Recording

You can insert (record) video and audio simultaneously from the camera onto any recorded tape. P-1

Operation P-2

- Monitor the picture being inserted on the viewfinder screen.
- Select the same tape speed as was used for already recorded portion with the recording mode/EDIT switch in the lithium battery compartment.

1 Set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "−" side of the EDITSEARCH button and release the button at the point where the insert should end.
The unit will be set to recording pause mode.
4 Display the counter in the display window and press the RESET button.
The counter is reset to zero.
(For an accurate ending point, press the RESET button immediately after the EDIT SEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "−" side of the EDITSEARCH button and release the button at the point where the insert should begin.
6 Press the ZERO MEM button.
The insert ending point is stored in memory.
7 Press the START/STOP button.
Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode, press the ZERO MEM button so that the ZERO MEM indicator disappears.

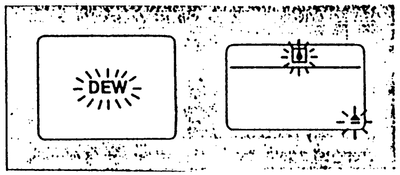
To insert the date or time
Follow steps 1 through 6 above, press the SELECT button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

NOTES ON ZERO MEM MODE
ZERO MEM mode is cancelled automatically in the following cases.
- When an insert recording is completed.
- When the ■ or ◁ button is pressed or the tape is sent forward or rewound in fast-forward or rewind mode.
- When the position of the POWER switch is changed.
- When the power is turned off.
- When the cassette is ejected.

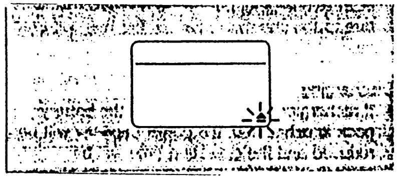
To restore it, press the ZERO MEM button again.

NOTES
- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be set to stop mode.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted programme.

Q-1



Q-2



General

Notes on Moisture Condensation

If the unit is brought directly from a cold to a warm location, moisture may condense inside the unit, on the surface of the tape or on the lens. In this condition, the tape may adhere to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the unit is furnished with moisture sensors.

If moisture is present inside the recorder section Q-1

When the power is turned on, the DEW indicator blinks in the viewfinder and the ⬇ indicator blinks in the display window. No function button except the EJECT switch will work.

Eject the cassette if present, and turn off the unit and let it sit with the cassette compartment open (at least for one hour).

The unit can be used again if none of the DEW and ⬇ indicators appears when the power is turned on again.

If moisture is present on the surface of the tape Q-2

When the tape is inserted and a tape transport button is pressed, the ⏏ indicator blinks in the display window. No function button except the EJECT switch will work.

Eject the cassette and let the unit and the cassette sit at least for one hour.

The cassette can be used again if the ⏏ indicator does not appear when the cassette is inserted and a tape transport button is pressed.

If moisture is present on the lens

There are no caution indicator, but the lens becomes dim. Turn off the power and leave the unit unused at least for one hour.

Use of the Battery Pack

There two types of batteries, non-rechargeable ones such as manganese, alkaline, or lithium batteries, and rechargeable ones such as nichel-cadmium or lead batteries. The NP-55/77 battery pack used for this unit is a rechargeable type. When a rechargeable battery is used under proper conditions, the power capacity remains stable for a long time.

Battery Pack Operating Time

It is recommended to have enough battery packs to operate the unit for two to three times more than the expected recording time.

The average operating time of the battery pack under normal conditions (for example recording continuously indoors with a fully charged battery pack) is as follows:

Approximately 40 minutes with the NP-55.
Approximately 80 minutes with the NP-77.

Even when not recording, the power in the battery will be consumed under the following conditions:

- in the record standby mode
- when automatic focus is activated
- when using power zooming
- when inserting or removing a cassette

For this reason, extra battery packs are necessary when recording.

Ambient Temperature

If the battery pack is used in a cold environment, its operating time is shortened.

- A chemical change occurs inside the battery when generating electrical energy. When the ambient temperature is high, the chemical change is stronger and the operating time is extended.
- As manganese, alkaline, and lithium batteries are affected more than nichel-cadmium batteries by ambient temperature, the NP-55/77 should be used instead of the EBP-55 when operating the camera in a cold environment.

Charging and Discharging

For optimum use of the battery pack, be sure to charge it fully before using it and to discharge it completely after use.

Charging

- The battery can be charged within a temperature range of 0°C to 40°C (32°F to 104°F). However, it is difficult to charge the battery in a cold environment. We recommend undertaking charging operations within a temperature range of 10°C to 30°C (50°F to 86°F)
- The battery pack is not charged at the factory. Before using the battery pack, please charge it.
- If the battery pack is fully charged but left unused for a long time (about 1 year) it gradually becomes discharged. It can be charged again, but in this case the operating time would be shorter than normal even when fully charged. After several cycles of being used and recharged, operating time will return to normal.
- The battery pack may become warm after use or after charging, but this is normal. This is due to the chemical change that has occurred inside the battery.

Discharging

- If recharging is repeated before the battery pack is exhausted, the power capacity will be reduced and the operating time will be shortened. However, the power capacity can be recovered by performing complete recharge and discharge operations.
- The remaining power in the battery pack can be discharged easily when usign it with an optional video light such as the Sony HVL-10D.

Capacity of a Battery Pack
Capacity of a battery pack is the capability to provide electric current for a certain extension of time. Recharging a battery is to recover the electric power by providing electric current to the battery. Therefore, if the power capacity falls, the capability to recover the electrical energy will also be reduced.

Storage

- When the battery pack will not be used for a long period of time, it should be completely discharged, removed from the unit, and stored in a cool place.
  If the battery pack is installed on the unit and the power is not turned off, a small amount of electric current flow occurs.
  This results in decrease of battery power capacity and shorter battery life.
- Even when the battery is not in use, it discharges itself. This is called self-discharge. The available power capacity of the battery pack decreases by about 20 % in one month and 30 % in two months, which is greater than a manganese or alkaline battery.
- Store the batteries in a cool place since self-discharging is enhanced when stored under high temperature, resulting in a decrease of battery capacity.

Life of the Battery Pack

The battery pack can be used about 500 times under normal temperature. The battery pack can be used until its capacity becomes less than 50 % and it can no longer be charged. The 🔋 mark blinks to indicate that the inserted battery can no longer provide the full operating time even though it is fully charged. In this case, use a new battery pack.

Troubleshooting

If you think you have a problem, double-check before calling the serviceman.
You may have overlooked something relatively simple!

Symptom	Cause	Procedure
The power will not turn on.	The POWER switch on the AC power adaptor AC-V55 is set to OFF.	Depress the POWER switch.
The START/STOP button does not operate.	The tape is affixed to the drum.	Remove the cassette with the EJECT switch.
	The tape is at its end.	Rewind the tape or use a new one.
	The POWER switch is set to PLAYER or OFF.	Set it to CAMERA.
	The tab on the cassette is out (red).	Use a new cassette or slide the tab.
The tape does not move by pressing a tape transport button.	The POWER switch is set to CAMERA or OFF.	Set it to PLAYER.
	The tape is at its end.	Rewind the tape or use a new one.
Recording stops suddenly.	The ZERO MEM mode is set.	Press the ZERO MEM button.
The power turns off.	While being operated in the CAMERA mode, the recorder has been in the pause mode for more than 5 minutes.	Set the POWER switch to OFF and then to CAMERA.
	The battery is exhausted.	Use a charged battery.
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	The contrast between the subject and background is too high; the camera is not malfunctioning.	—
The battery pack is quickly discharged.	The ambient temperature is too low.	—
	The battery pack has not been charged fully.	Charge the battery pack again.
The auto focusing function does not work.	The AUTO LOCK switch is set to the white mark position.	Set it to the green mark position.
	Shooting conditions are not suitable for auto focusing operation.	Focus manually. (See page 13.)
The auto white balance function does not work.	The white balance sensor is covered.	Remove the obstacle.
	Shooting conditions are not suitable for the auto white balance operation.	Adjust the white balance manually. (See page 14.)
The cassette cannot be removed from the compartment.	The battery is exhausted.	Use the charged battery or the AC power adaptor.
The image on the viewfinder screen is not clear.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens. (See page 9.)
The playback picture is not clear.	The recording mode/EDIT switch is set to the "EDIT" position.	Set it to the opposite position to the arrow direction.
	The programme position for the VTR is not adjusted correctly on the TV.	Adjust the TV. (See page 16.)
	The video heads may be contaminated.	Clean the heads using a cleaning cassette.

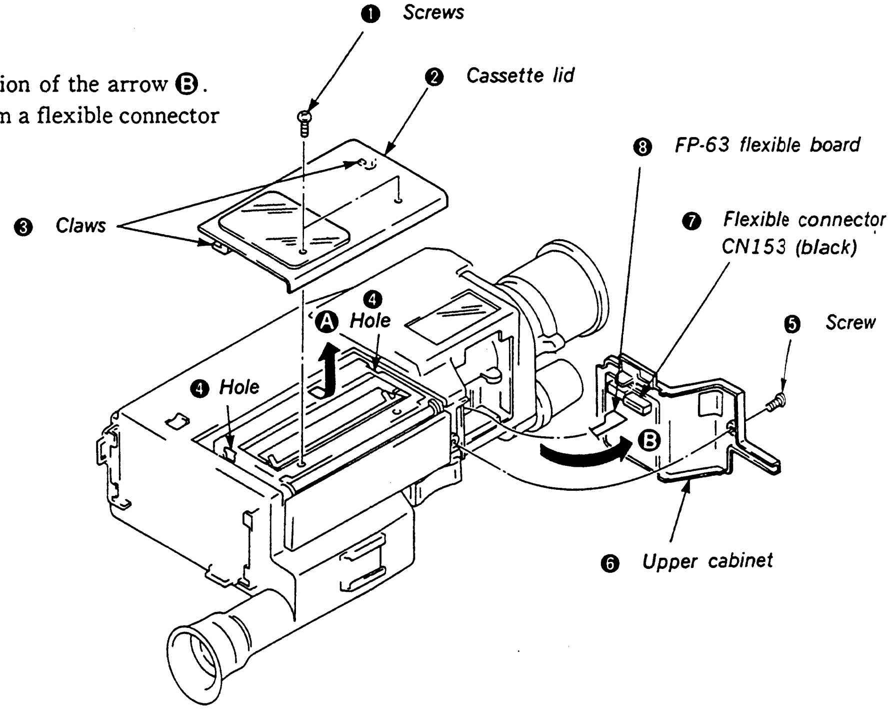
SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CASSETTE LID, UPPER CABINET

1) Remove two screws ❶ .
2) Remove cassette lid ❷ by sliding it in the direction of arrow Ⓐ.

Note) When installing the casette lid, set two claws ❸ into the holes ❹ .

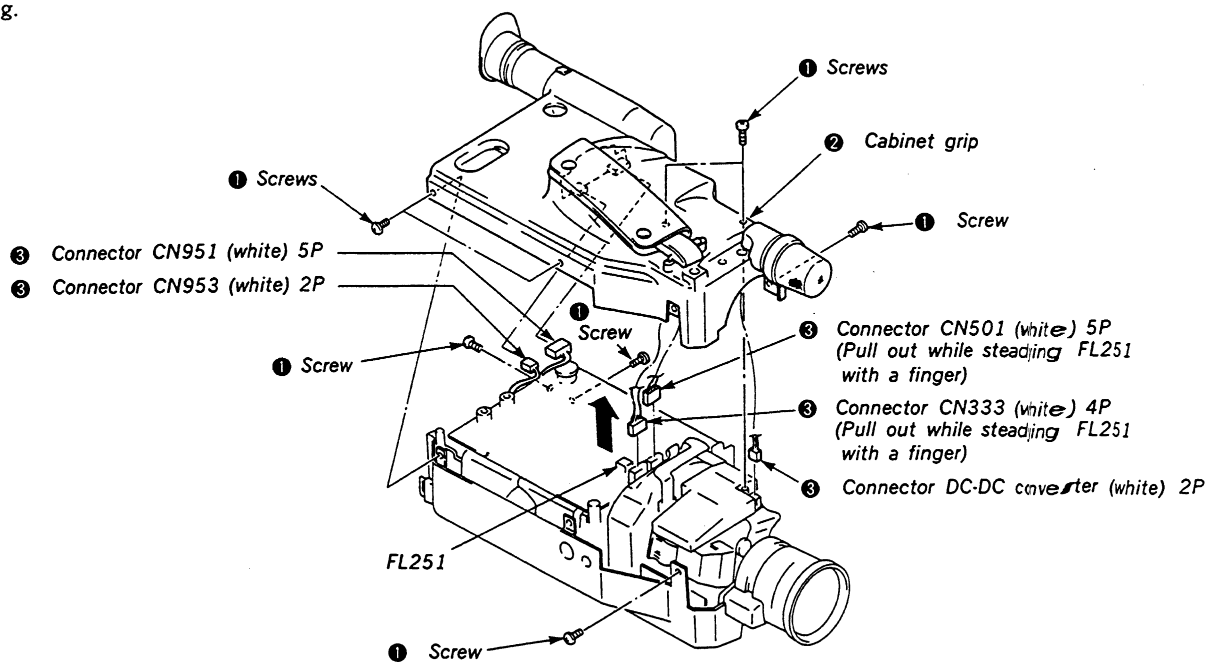
3) Remove a screw ❺ .
4) Remove upper cabinet in the direction of the arrow Ⓑ.
5) Remove FP-63 flexible board ❽ from a flexible connector (CN153) ❼ .


❶ Screws
❷ Cassette lid
❽ FP-63 flexible board
❸ Claws
❼ Flexible connector CN153 (black)
❹ Hole
Ⓐ
❺ Screw
❹ Hole
Ⓑ
❻ Upper cabinet

2-2. REMOVAL OF CABINET GRIP

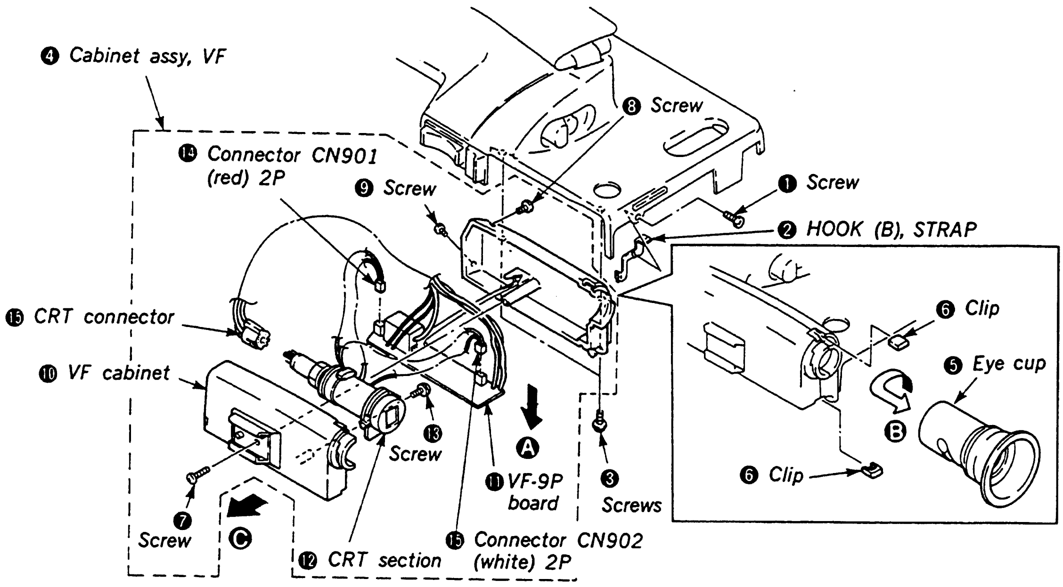
1) Remove eight screws ❶ .
2) Remove cabinet grip ❷ in the direction of the arrow.
3) Remove five connectors (CN333, CN501, CN951, CN953, DC-DC converter ❸).

Note) When installing cabinet grip, set the harness as it was before removing.


❶ Screws
❷ Cabinet grip
❶ Screws
❶ Screw
❸ Connector CN951 (white) 5P
❸ Connector CN953 (white) 2P
❶ Screw
❶ Screw
❸ Connector CN501 (white) 5P (Pull out while steadying FL251 with a finger)
❸ Connector CN333 (white) 4P (Pull out while steadying FL251 with a finger)
❸ Connector DC-DC converter (white) 2P
FL251
❶ Screw

2-3. REMOVAL OF VF-9P BOARD AND CRT SECTION

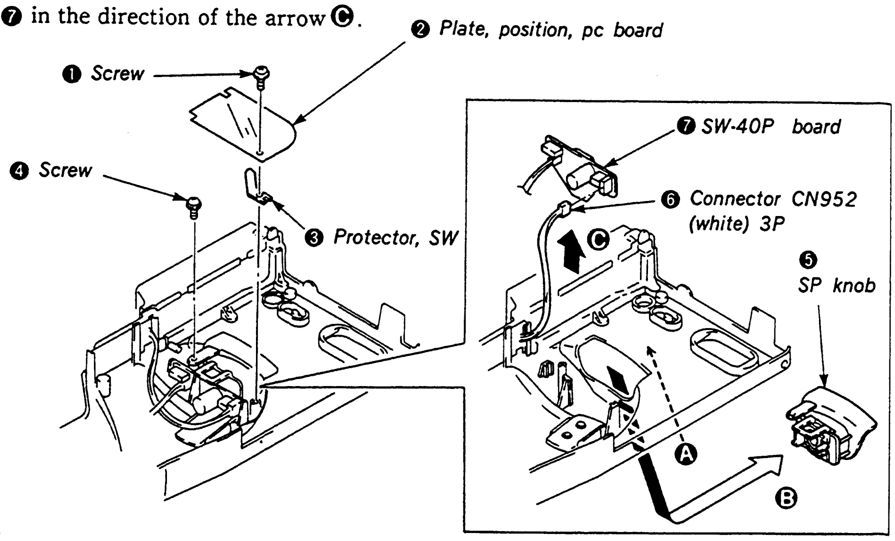
1) Remove a screw ① .
2) Remove hook (B), strap ② .
3) Remove a screw ③ .
4) Remove cabinet assy, VF ④ in the direction of the arrow Ⓐ .
5) Remove eye cup ⑤ in the direction of the arrow Ⓑ .
6) Remove two clips ⑥ .
7) Remove a screw ⑦ .
8) Remove a screw ⑧ .
9) Remove a screw ⑨ .
10) Remove VF cabinet ⑩ in the direction of the arrow Ⓒ .
11) Remove VF-9P board ⑪ from VF cabinet ⑩ .
12) Remove CRT section ⑫ by taking out a screw ⑬ .
13) Remove two connectors (CN901, CN902) ⑭ .
14) Remove CRT connector ⑮ .


④ Cabinet assy, VF
⑭ Connector CN901 (red) 2P
⑨ Screw
⑧ Screw
① Screw
② HOOK (B), STRAP
⑥ Clip
⑤ Eye cup
Ⓑ
⑥ Clip
⑮ CRT connector
⑩ VF cabinet
⑬ Screw
Ⓐ
⑪ VF-9P board
③ Screws
⑦ Screw
Ⓒ
⑫ CRT section
⑮ Connector CN902 (white) 2P

2-4. REMOVAL OF SW-40P BOARD

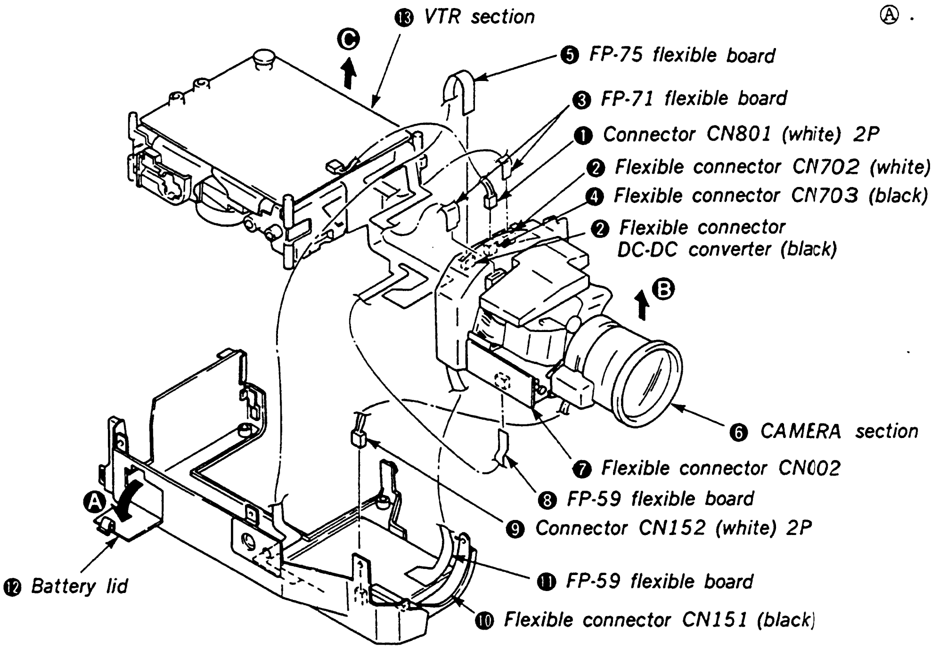
1) Remove a screw ① .
2) Remove a claw ② .

3) Remove a screw ④ .
4) SP knob ⑤ can be easy to remove by pushing up portion Ⓐ of cabinet with a finger.
5) Remove SP knob ⑤ in the direction of the arrow Ⓑ .
6) Remove connector (CN952) ⑥ .
7) Remove SW-40P board ⑦ in the direction of the arrow Ⓒ.


② Plate, position, pc board
① Screw
④ Screw
③ Protector, SW
⑦ SW-40P board
⑥ Connector CN952 (white) 3P
Ⓒ
⑤ SP knob
Ⓐ
Ⓑ

2-5. SEPARATION OF CAMERA SECTION AND VTR SECTION

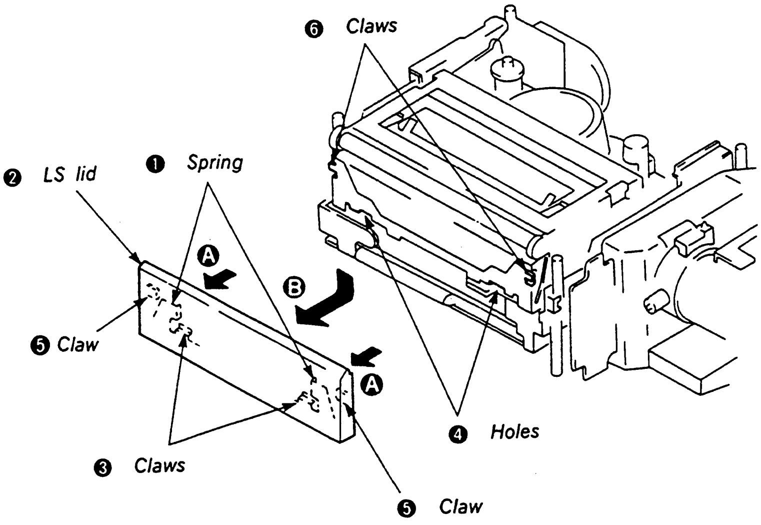
1) Remove connector (CN801) ❶ .
2) Remove FP-71 flexible connector from two flexible connectors (CN702, DC-DC converter) ❷ .
3) Remove FP-75 flexible connector from flexible connector (CN703) ❹ .
4) Remove CAMERA section ❻ in the direction of the arrow Ⓑ.
5) Remove FP-59 flexible board ❽ from a flexible connector (CN002) ❼ .
6) Remove connector CN152 ❾ .
7) Remove FP-59 flexible board ⓫ from flexible connector (CN151) ❿ .
8) Open battery lid ⓬ in the direction of the arrow Ⓐ .
9) Remove VTR section ⓭ in the direction of the arrow Ⓒ.


⓭ VTR section
Ⓐ .
Ⓒ
❺ FP-75 flexible board
❸ FP-71 flexible board
❶ Connector CN801 (white) 2P
❷ Flexible connector CN702 (white)
❹ Flexible connector CN703 (black)
❷ Flexible connector DC-DC converter (black)
Ⓑ
❻ CAMERA section
❼ Flexible connector CN002
❽ FP-59 flexible board
❾ Connector CN152 (white) 2P
⓫ FP-59 flexible board
❿ Flexible connector CN151 (black)
Ⓐ
⓬ Battery lid

2-6. REMOVAL OF LS LID

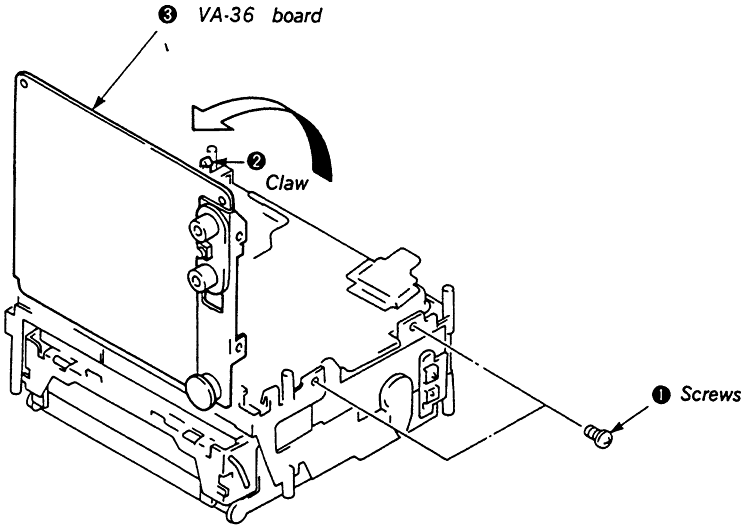
1) Insert a screwdriver into springs ❶ and push in the direction of the arrow Ⓐ, and then remove LS lid ❷ in the direction of the arrow Ⓑ.

Note) When installing the LS lid, set two claws ❸ into each two holes ❹ and set two claws ❺ back to with each two claws ❻ .


❻ Claws
❷ LS lid
❶ Spring
Ⓐ
Ⓑ
❺ Claw
Ⓐ
❸ Claws
❹ Holes
❺ Claw

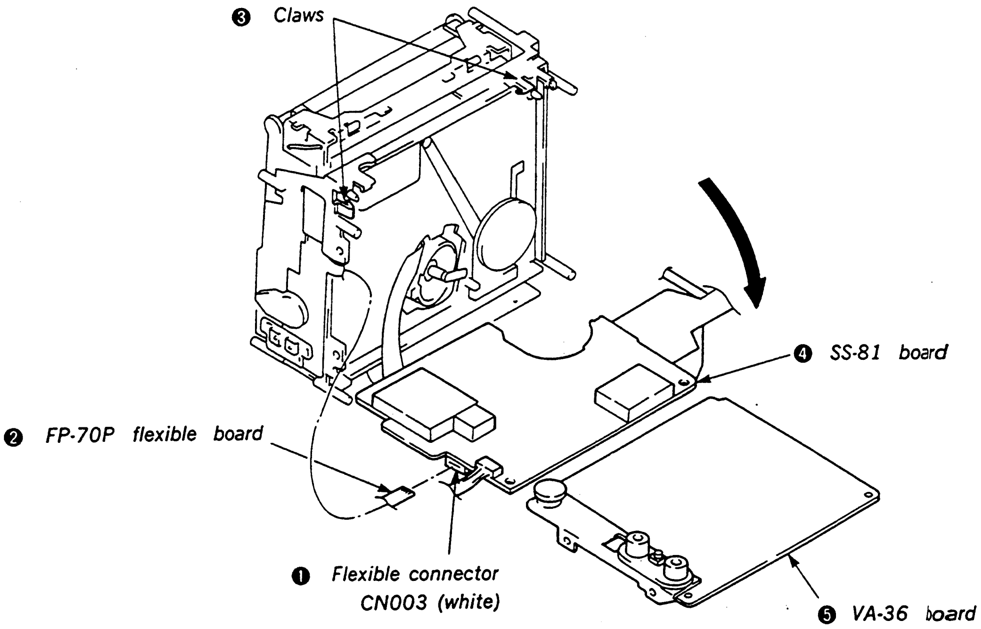
2-7. OPENING OF VA-36 BOARD

1) Remove two screws ❶ .
2) Unhook a claw ❷ .
3) Open VA-36 board ❸ in the direction of the arrow.


❸ VA-36 board
❷ Claw
❶ Screws

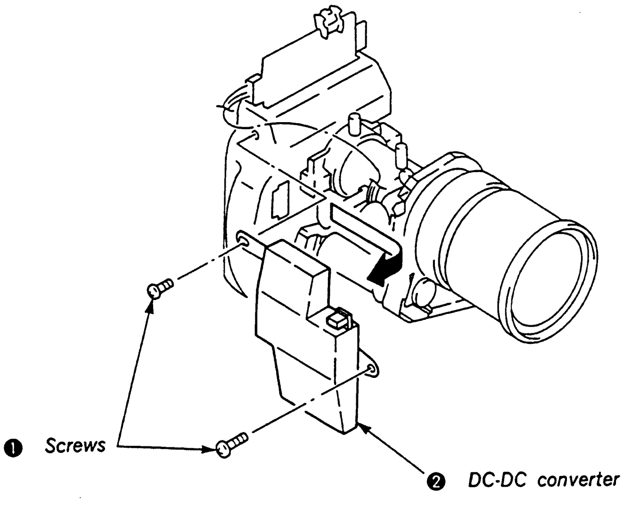
2-8. OPENING OF SS-81 BOARD

1) Remove FP-70P flexible board ❷ from flexible connector (CN003) ❶ .
2) Unhook two claws ❸ , open SS-81 board ❹ and VA-36 board ❺ in the direction of the arrow.


❸ Claws
❹ SS-81 board
❷ FP-70P flexible board
❶ Flexible connector CN003 (white)
❺ VA-36 board

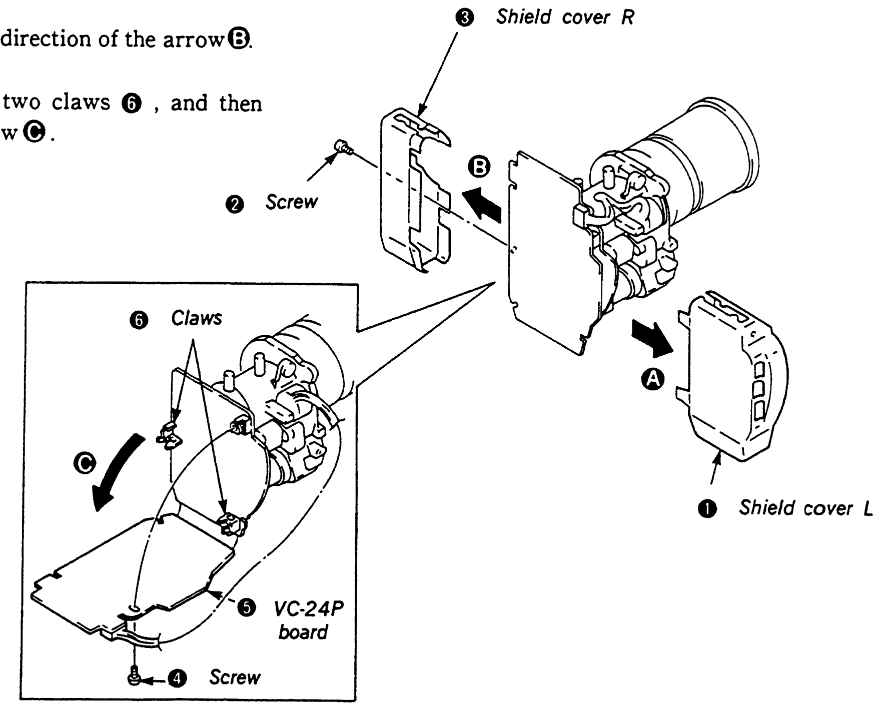
2-9. REMOVAL OF DC-DC CONVERTER

1) Remove two screws ❶ .
2) Slide DC-DC converter ❷ in the direction of the arrow, and then remove it.


❶ Screws
❷ DC-DC converter

2-10. OPENING OF VC-24P BOARD

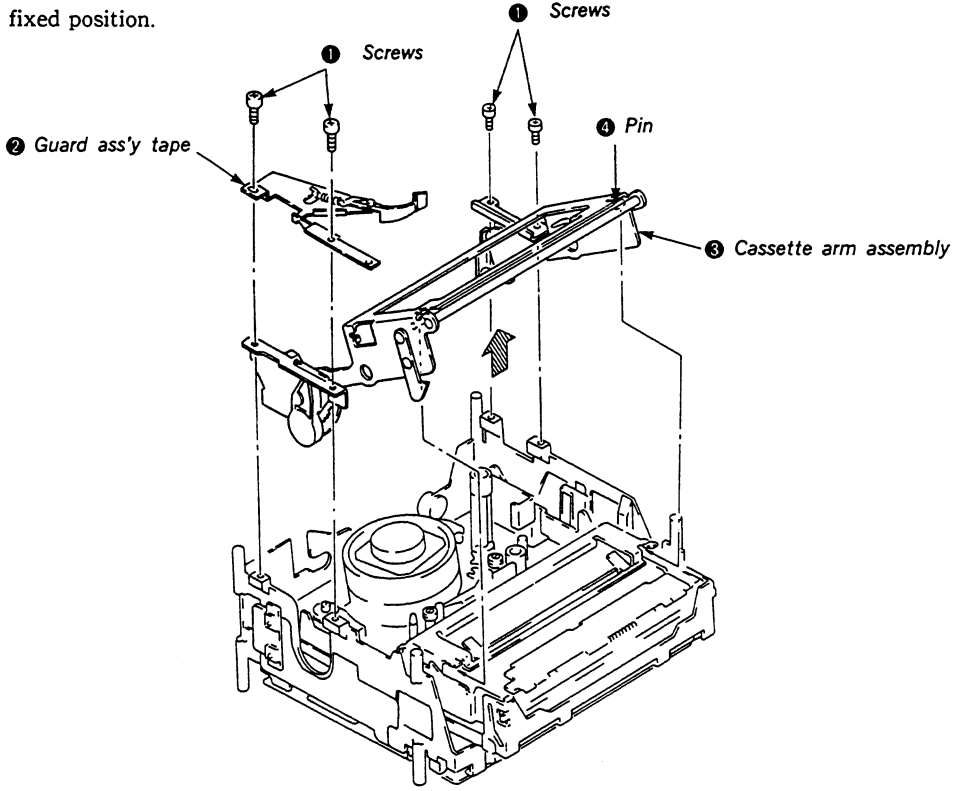
1) Remove shield cover L ❶ in the direction of the arrow Ⓐ.
2) Remove a screw ❷ .
3) Remove shield cover R ❸ in the direction of the arrow Ⓑ.
4) Remove a screw ❹ .
5) Unhook VC-24P board ❺ from two claws ❻ , and then open in the direction of the arrow Ⓒ.


❸ Shield cover R
❷ Screw
Ⓑ
Ⓐ
❶ Shield cover L
❻ Claws
Ⓒ
❺ VC-24P board
❹ Screw

2-11. REMOVAL OF CASSETTE ARM ASSEMBLY

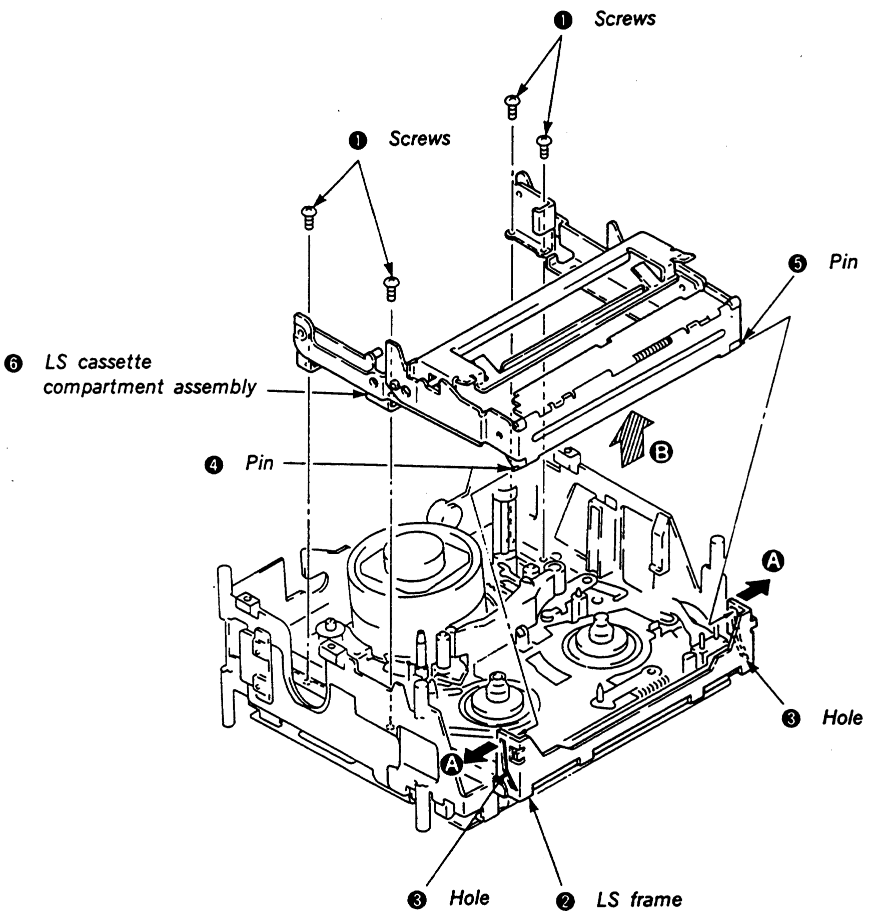
1) Remove four screws ❶ and Guard ass'y tape ❷ .
2) Remove cassette arm assembly ❸ in the direction of the arrow.

Note) When installing the cassette arm assembly ❸ , set pin ❹ into the fixed position.

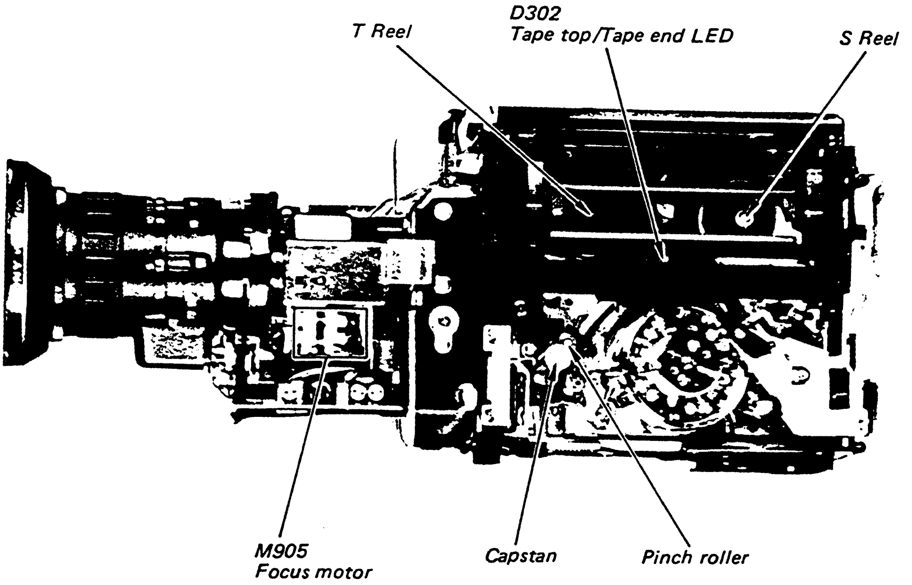

❶ Screws
❶ Screws
❷ Guard ass'y tape
❹ Pin
❸ Cassette arm assembly

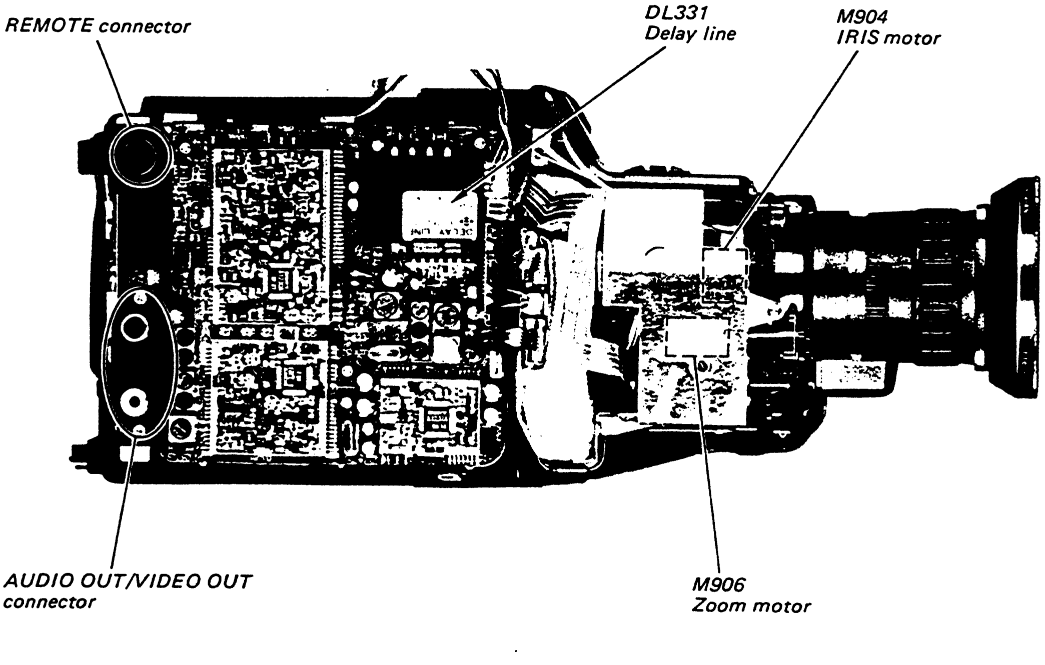
2-12. REMOVAL OF LS CASSETTE COMPARTMENT ASSEMBLY

1) Remove four screws ❶ .
2) Take pin ❹ and pin ❺ out of the slits ❸ of LS frame by pushing slit portions ❸ in the direction of the arrow Ⓐ (Remove pin ❹ first, because it is rather shorter than pin ❺ .).
3) Remove LS cassette compartment ❻ in the direction of the arrow Ⓑ .


❶ Screws
❶ Screws
❺ Pin
❻ LS cassette compartment assembly
❹ Pin
Ⓑ
Ⓐ
Ⓐ
❸ Hole
❸ Hole
❷ LS frame

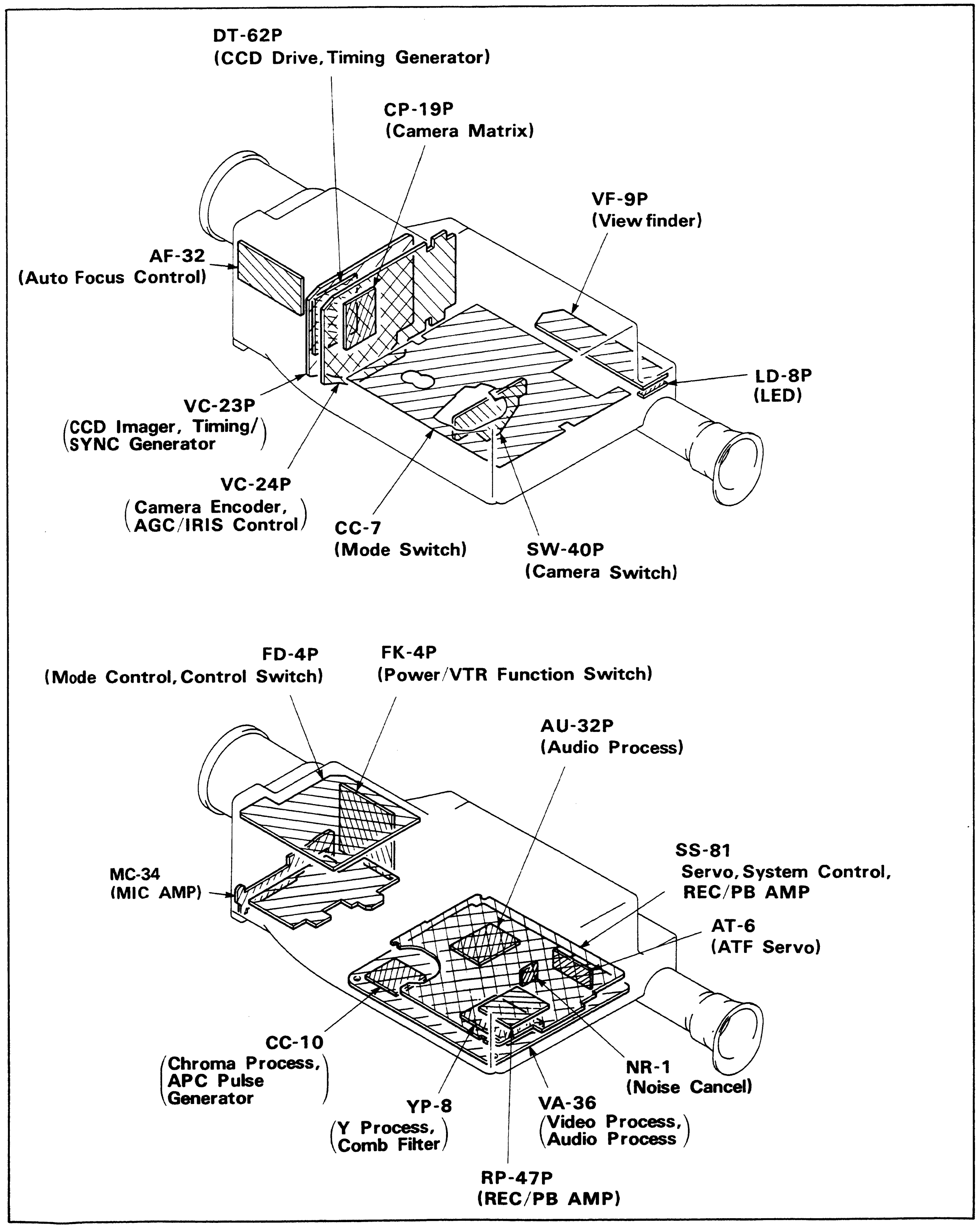
2-13. INTERNAL VIEWS


T Reel
D302
Tape top/Tape end LED
S Reel
M905
Focus motor
Capstan
Pinch roller

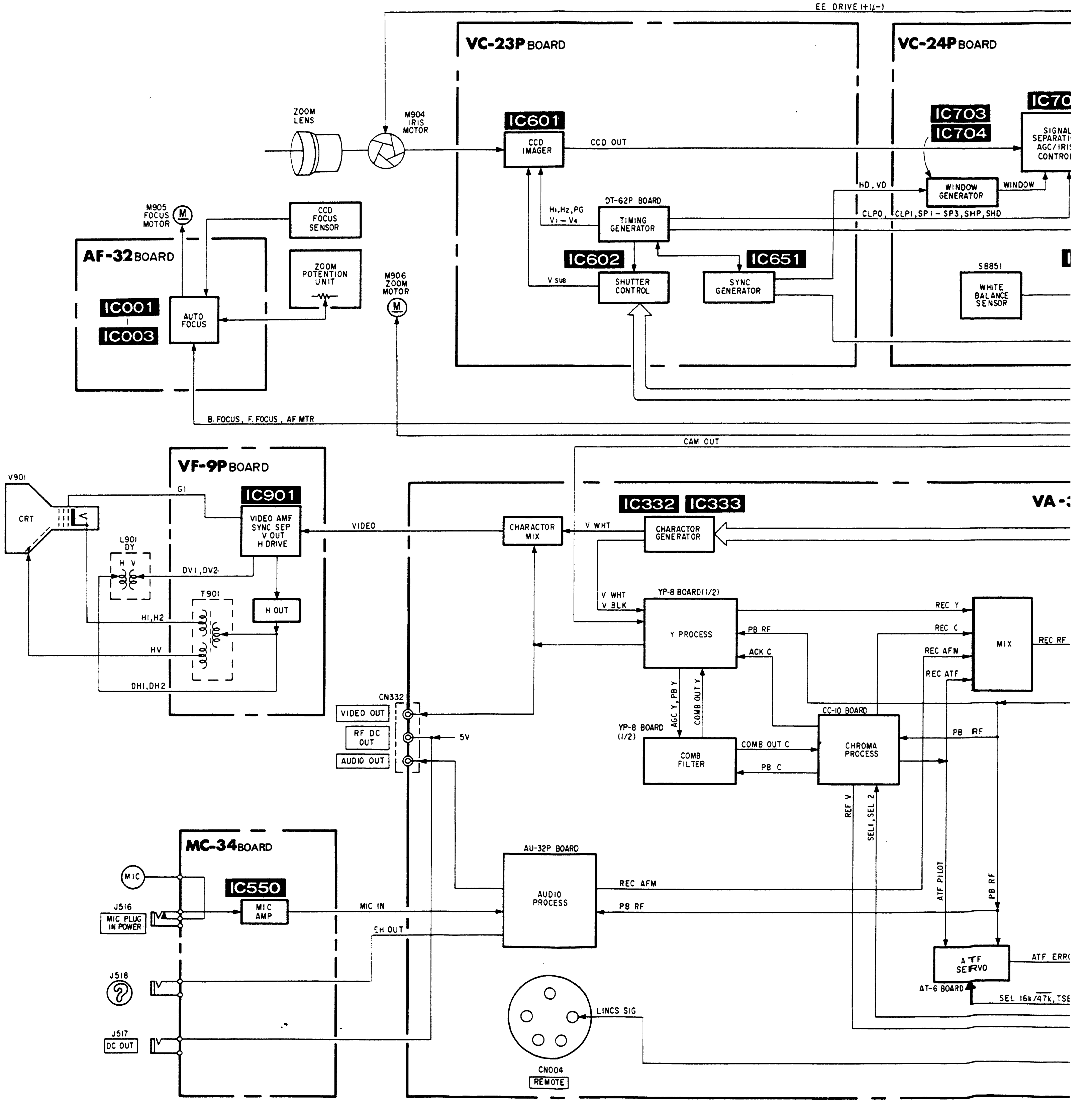

REMOTE connector
DL331
Delay line
M904
IRIS motor
AUDIO OUT/VIDEO OUT
connector
M906
Zoom motor

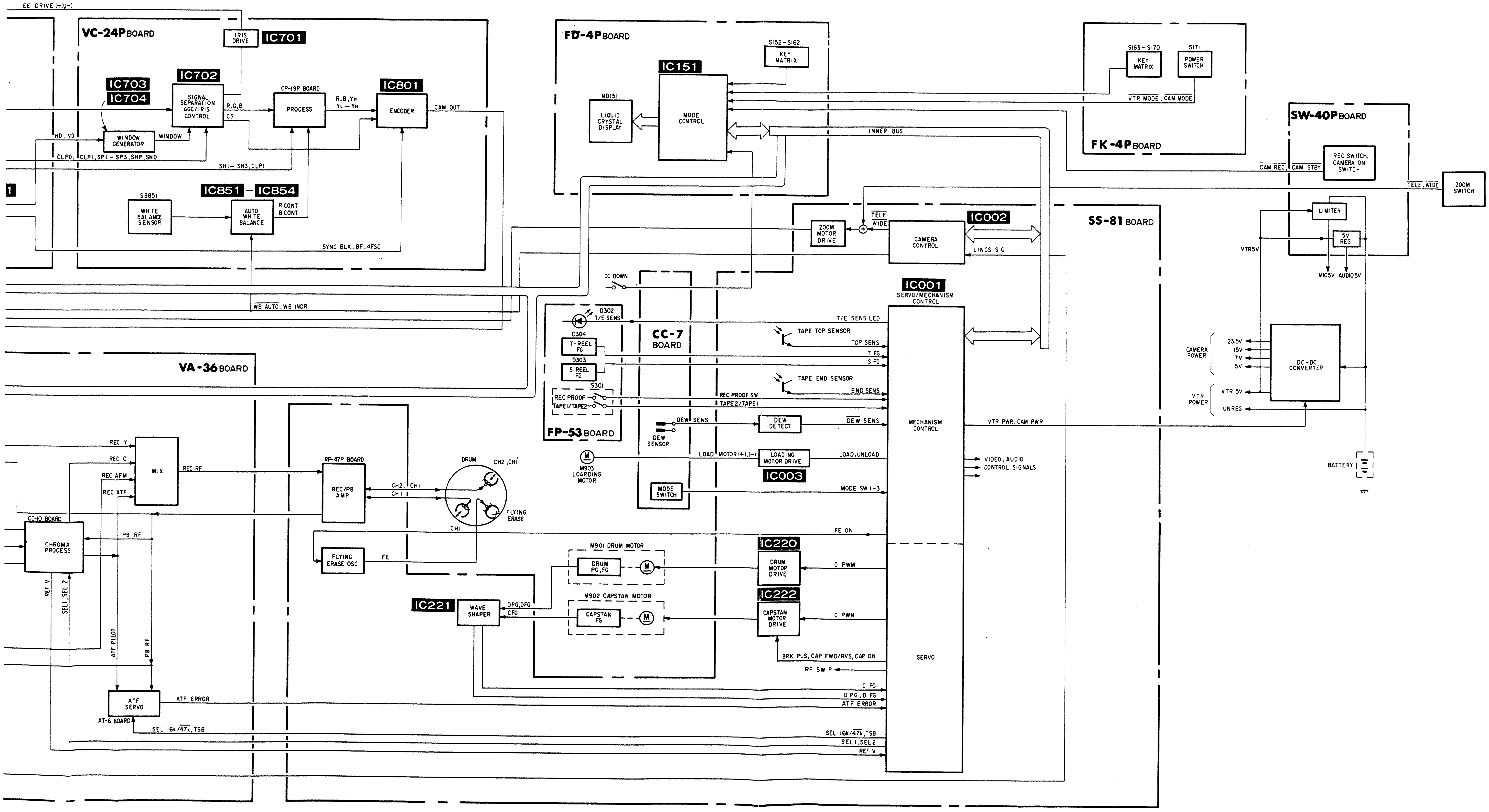
SECTION 3
DIAGRAM

3-1. CIRCUIT BOARDS LOCATION

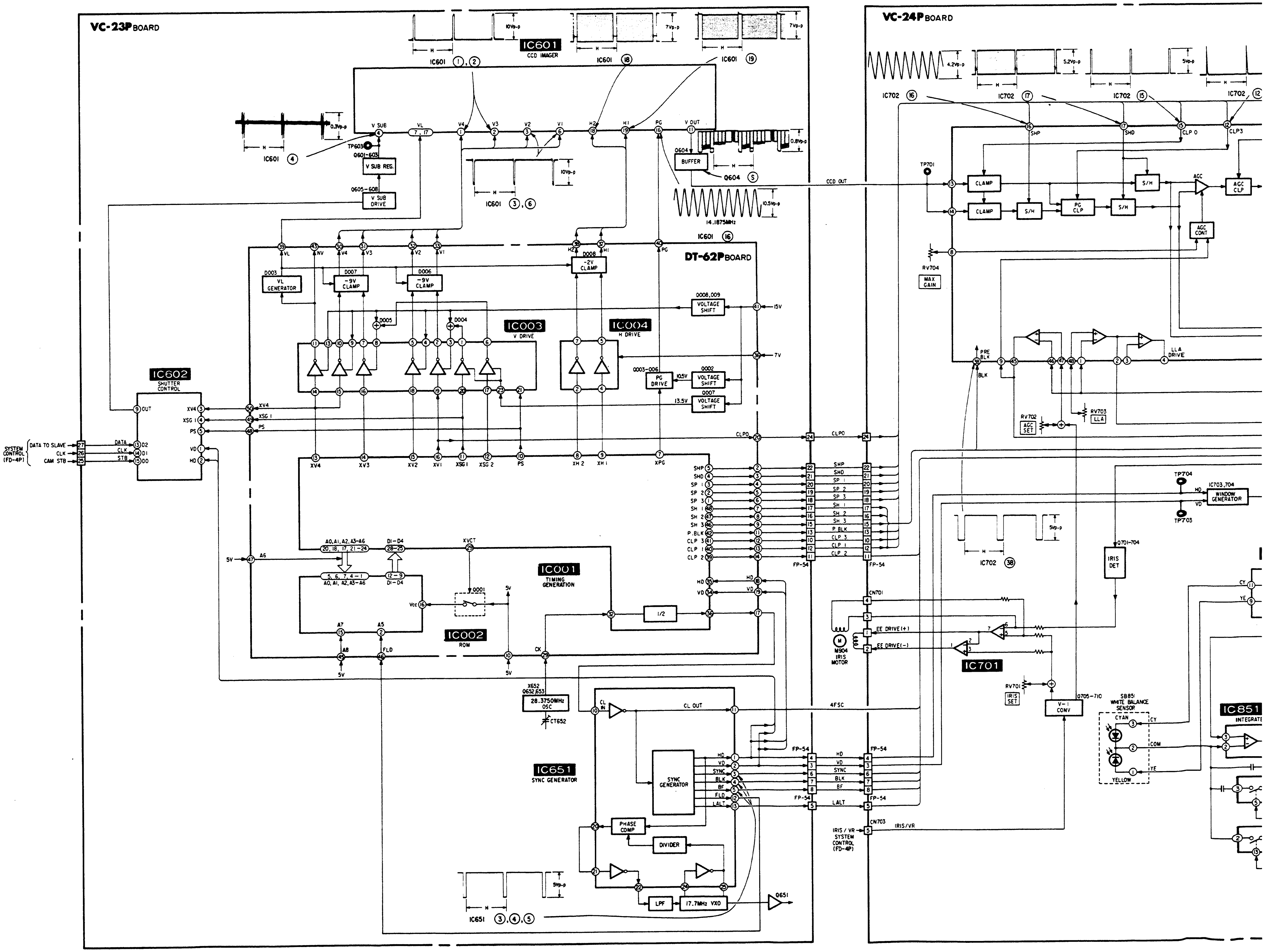

DT-62P
(CCD Drive, Timing Generator)
CP-19P
(Camera Matrix)
VF-9P
(View finder)
AF-32
(Auto Focus Control)
LD-8P
(LED)
VC-23P
(CCD Imager, Timing/SYNC Generator)
VC-24P
(Camera Encoder, AGC/IRIS Control)
CC-7
(Mode Switch)
SW-40P
(Camera Switch)
FD-4P
(Mode Control, Control Switch)
FK-4P
(Power/VTR Function Switch)
AU-32P
(Audio Process)
SS-81
Servo, System Control, REC/PB AMP
MC-34
(MIC AMP)
AT-6
(ATF Servo)
CC-10
(Chroma Process, APC Pulse Generator)
NR-1
(Noise Cancel)
YP-8
(Y Process, Comb Filter)
VA-36
(Video Process, Audio Process)
RP-47P
(REC/PB AMP)

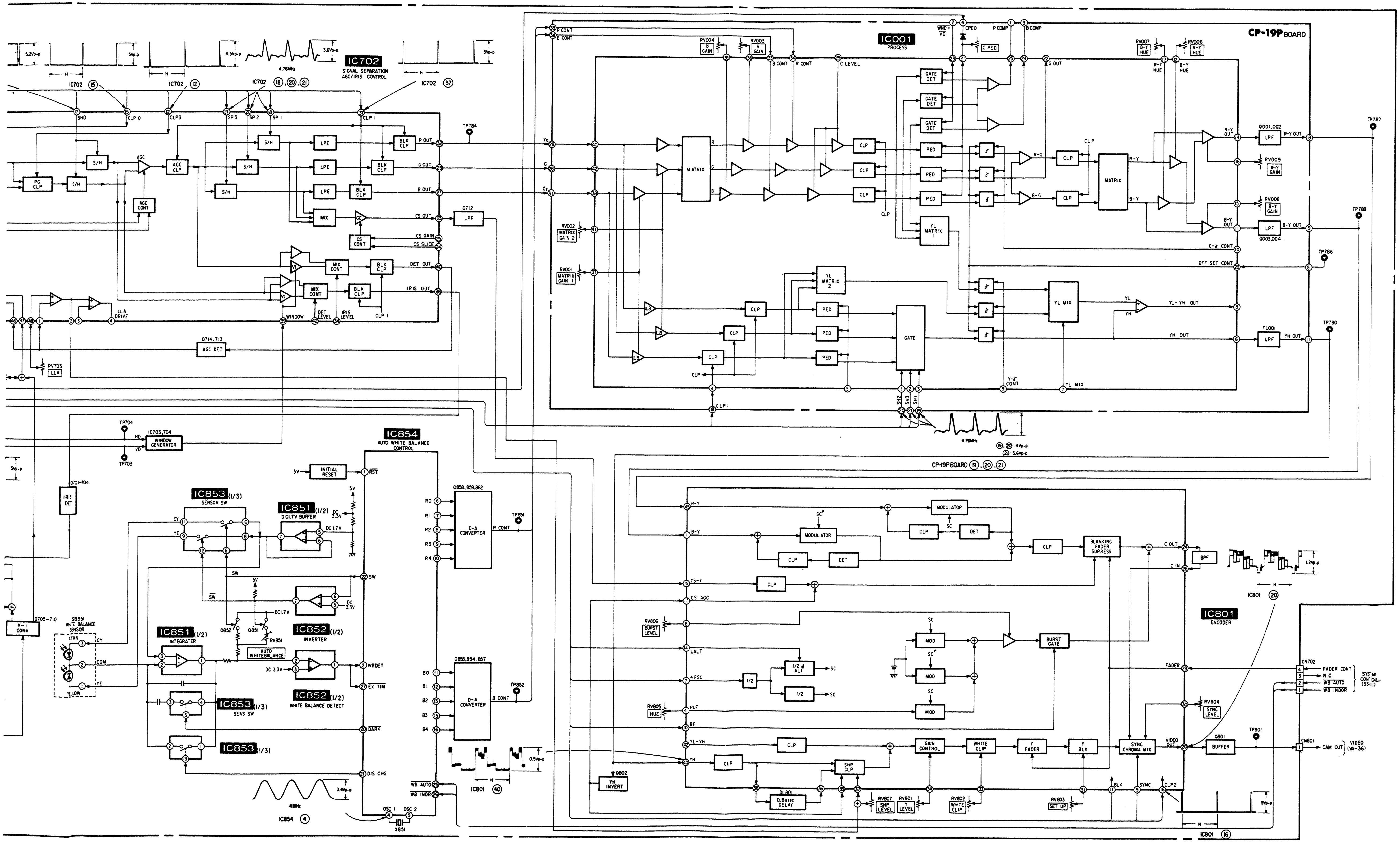
3-2. OVERALL BLOCK DIAGRAM


EE DRIVE (+),(−)
VC-23P BOARD
VC-24P BOARD
ZOOM LENS
M904 IRIS MOTOR
IC601
CCD IMAGER
CCD OUT
IC703
IC704
IC70
SIGNAL
SEPARATI
AGC/IRI
CONTRO
WINDOW GENERATOR
WINDOW
HD, VD
CLPO, CLP1, SP1 – SP3, SHP, SHD
M905 FOCUS MOTOR
CCD FOCUS SENSOR
AF-32 BOARD
IC001
IC003
AUTO FOCUS
ZOOM POTENTION UNIT
M906 ZOOM MOTOR
H1, H2, PG
V1 – V4
DT-62P BOARD
TIMING GENERATOR
IC602
IC651
V SUB
SHUTTER CONTROL
SYNC GENERATOR
SB851
WHITE BALANCE SENSOR
B. FOCUS, F. FOCUS, AF MTR
CAM OUT
V901
CRT
VF-9P BOARD
G1
IC901
VIDEO AMF
SYNC SEP
V OUT
H DRIVE
L901 DY
H V
DV1, DV2
T901
H OUT
H1, H2
HV
DH1, DH2
VIDEO
CHARACTOR MIX
IC332
IC333
VA-
V WHT
CHARACTOR GENERATOR
V WHT
V BLK
YP-8 BOARD (1/2)
Y PROCESS
PB RF
ACK C
REC Y
REC C
REC AFM
REC ATF
MIX
REC RF
AGC Y, PB Y
COMB OUT Y
YP-8 BOARD (1/2)
COMB FILTER
COMB OUT C
PB C
CC-10 BOARD
CHROMA PROCESS
PB RF
REF V
SEL1, SEL 2
CN332
VIDEO OUT
RF DC OUT
AUDIO OUT
5V
MC-34 BOARD
MIC
IC550
MIC AMP
J516
MIC PLUG IN POWER
MIC IN
EH OUT
J518
J517
DC OUT
AU-32P BOARD
AUDIO PROCESS
REC AFM
PB RF
ATF PILOT
PB RF
ATF SERVO
AT-6 BOARD
ATF ERR
SEL 16k/$\overline{47k}$, TSE
LINCS SIG
CN004
REMOTE

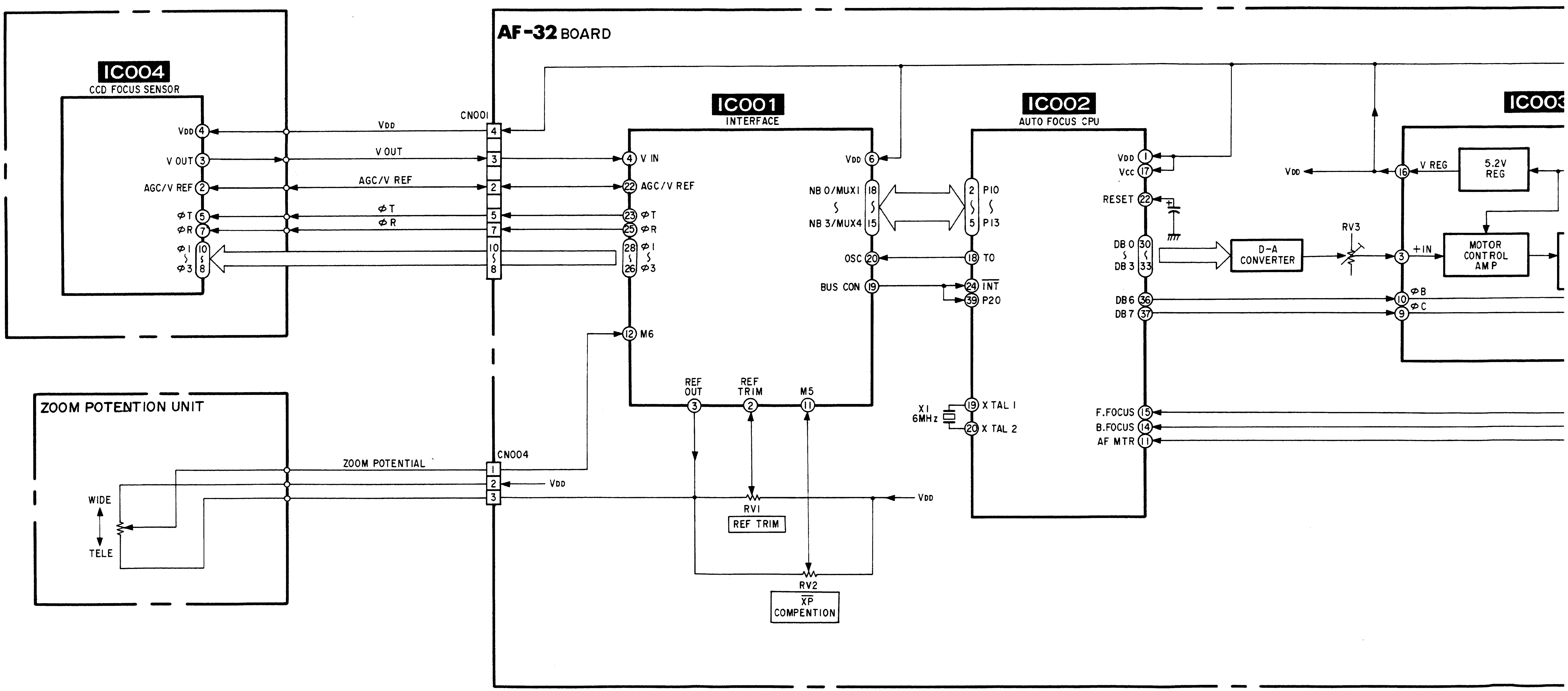

EE DRIVE (+),(−)
VC-24P BOARD
IRIS DRIVE
IC701
IC702
IC703
IC704
SIGNAL SEPARATION AGC/IRIS CONTROL
R,G,B
CS
CP-19P BOARD
PROCESS
R,B,YH
YL − YH
IC801
ENCODER
CAM OUT
HD, VD
WINDOW GENERATOR
WINDOW
CLP0, CLP1, SP1 − SP3, SHP, SHD
SH1 − SH3, CLP1
1
IC851 − IC854
SB851
WHITE BALANCE SENSOR
AUTO WHITE BALANCE
R CONT
B CONT
SYNC BLK, BF, 4FSC
WB AUTO, WB INDR
VA-36 BOARD
FD-4P BOARD
S152 − S162
KEY MATRIX
IC151
ND151
LIQUID CRYSTAL DISPLAY
MODE CONTROL
INNER BUS
FK-4P BOARD
S163 − S170
KEY MATRIX
S171
POWER SWITCH
VTR MODE, CAM MODE
SW-40P BOARD
REC SWITCH, CAMERA ON SWITCH
CAM REC, CAM STBY
TELE, WIDE
ZOOM SWITCH
LIMITER
5V REG
VTR5V
MIC5V
AUDIO5V
SS-81 BOARD
ZOOM MOTOR DRIVE
TELE
WIDE
IC002
CAMERA CONTROL
LINGS SIG
CC DOWN
IC001
SERVO/MECHANISM CONTROL
D302
T/E SENS
T/E SENS LED
CC-7 BOARD
TAPE TOP SENSOR
TOP SENS
D304
T-REEL FG
T FG
D303
S REEL FG
S FG
TAPE END SENSOR
END SENS
S301
REC PROOF
TAPE1/TAPE2
REC PROOF SW
TAPE 2/TAPE1
FP-53 BOARD
DEW SENS
DEW SENSOR
DEW DETECT
DEW SENS
MECHANISM CONTROL
VTR PWR, CAM PWR
M903 LOARDING MOTOR
LOAD MOTOR (+), (−)
LOADING MOTOR DRIVE
IC003
LOAD, UNLOAD
VIDEO, AUDIO CONTROL SIGNALS
MODE SWITCH
MODE SW 1-3
CAMERA POWER
23.5V
15V
7V
5V
DC-DC CONVERTER
VTR POWER
VTR 5V
UNREG
BATTERY
REC Y
REC C
REC AFM
REC ATF
MIX
REC RF
RP-47P BOARD
REC/PB AMP
CH2, CH1
CH1
DRUM
CH2, CH1'
FLYING ERASE
CH1
CC-10 BOARD
CHROMA PROCESS
PB RF
FE ON
FLYING ERASE OSC
FE
M901 DRUM MOTOR
DRUM PG, FG
M
IC220
DRUM MOTOR DRIVE
D PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
M
IC222
CAPSTAN MOTOR DRIVE
C PWN
IC221
WAVE SHAPER
DPG, DFG
CFG
REF V
SEL1, SEL 2
ATF PILOT
PB RF
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
SERVO
ATF SERVO
AT-6 BOARD
ATF ERROR
C FG
D PG, D FG
ATF ERROR
SEL 16k/47k, TSB
SEL 16k/47k, TSB
SEL1, SEL2
REF V

3-3. CAMERA BLOCK DIAGRAM

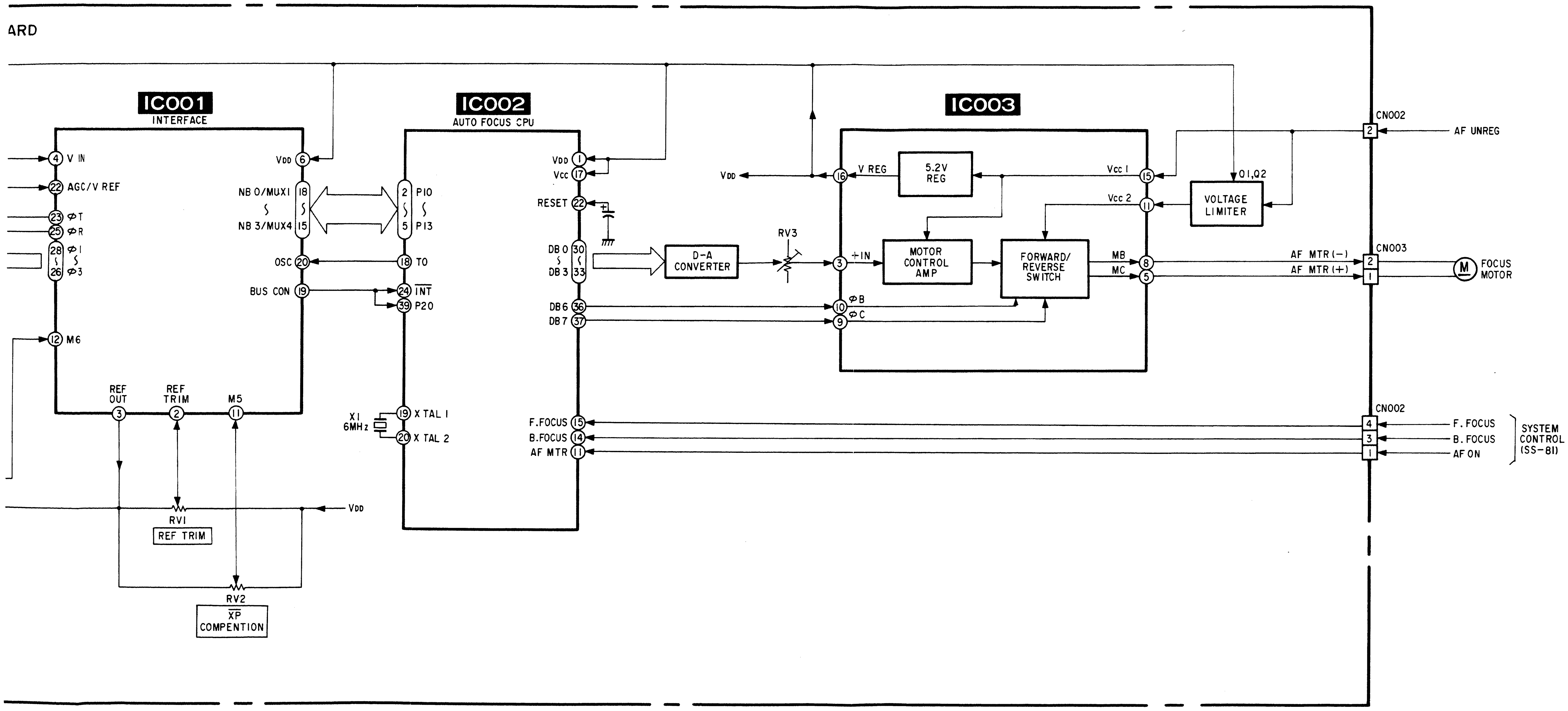

VC-23P BOARD
IC601
CCD IMAGER
IC601 ①,②
IC601 ⑱
IC601 ⑲
IC601 ④
IC601 ③,⑥
IC601 ⑯
V SUB
V SUB REG.
V SUB DRIVE
TP603
Q601-603
Q605-608
Q604
BUFFER
Q604 ⑤
V OUT
14.1875MHz
CCD OUT
DT-62P BOARD
D008
-2V CLAMP
D003
VL GENERATOR
D007
-9V CLAMP
D006
-9V CLAMP
D005
D004
IC003
V DRIVE
IC004
H DRIVE
D008,009
VOLTAGE SHIFT
D003-006
PG DRIVE
D002
VOLTAGE SHIFT
D007
VOLTAGE SHIFT
15V
7V
10.5V
13.5V
IC602
SHUTTER CONTROL
SYSTEM CONTROL (FD-4P)
DATA TO SLAVE
CLK
CAM STB
XV4
XV3
XV2
XV1
XSG 1
XSG 2
PS
XH 2
XH 1
XPG
CLPO
SHP
SHD
SP 1
SP 2
SP 3
SH 1
SH 2
SH 3
P.BLK
CLP 3
CLP 1
CLP 2
HD
VD
IC001
TIMING GENERATION
IC002
ROM
A0, A1, A2, A3-A6
D1-D4
XVCT
Q001
5V
1/2
X652
Q652,653
28.3750MHz OSC
CT652
CK
FLD
IC651
SYNC GENERATOR
CL IN
CL OUT
SYNC GENERATOR
PHASE COMP
DIVIDER
LPF
17.7MHz VXO
Q651
SYNC
BLK
BF
LALT
IC651 ③,④,⑤
FP-54
VC-24P BOARD
IC702 ⑯
IC702 ⑰
IC702 ⑮
IC702 ⑫
SHP
SHD
CLP 0
CLP3
TP701
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
RV704
MAX GAIN
PRE BLK
LLA DRIVE
RV702
AGC SET
RV703
LLA
TP704
IC703,704
WINDOW GENERATOR
TP703
IC702 ㊳
Q701-704
IRIS DET
CN701
EE DRIVE(+)
EE DRIVE(-)
M904
IRIS MOTOR
IC701
RV701
IRIS SET
Q705-710
V-I CONV
4FSC
CN703
IRIS/VR
IRIS / VR SYSTEM CONTROL (FD-4P)
S885
WHITE BALANCE SENSOR
CYAN
YELLOW
CY
COM
YE
IC851
INTEGRATE
0.3Vp-p
10Vp-p
7Vp-p
0.8Vp-p
10.5Vp-p
4.2Vp-p
5.2Vp-p
5Vp-p
H


CP-19P BOARD
IC702
SIGNAL SEPARATION AGC/IRIS CONTROL
IC001
PROCESS
IC801
ENCODER
IC854
AUTO WHITE BALANCE CONTROL
IC853 (1/3)
SENSOR SW
IC851 (1/2)
DC1.7V BUFFER
IC851 (1/2)
INTEGRATER
IC852 (1/2)
INVERTER
IC852 (1/2)
WHITE BALANCE DETECT
IC853 (1/3)
SENS SW
IC853 (1/3)
IC702 ⑮
IC702 ⑫
IC702 ⑱,⑳,㉑
IC702 ㊲
5.2Vp-p
5Vp-p
4.5Vp-p
3.6Vp-p
4.76MHz
SMD
CLP 0
CLP3
SP 3
SP 2
SP 1
CLP 1
PG CLP
S/H
AGC
AGC CLP
AGC CONT
LPE
BLK CLP
MIX
CS CONT
MIX CONT
R OUT
G OUT
B OUT
CS OUT
CS GAIN
CS SLICE
DET OUT
IRIS OUT
DET LEVEL
IRIS LEVEL
WINDOW
LLA DRIVE
Q712
LPF
TP784
Q714,713
AGC DET
RV703
LLA
TP704
TP703
HD
VD
IC703,704
WINDOW GENERATOR
Q701-704
IRIS DET
Q705-710
V-I CONV
SB851
WHITE BALANCE SENSOR
CYAN
YELLOW
CY
COM
YE
SW
DC 3.3V
DC 1.7V
5V
Q852
Q851
RV851
AUTO WHITEBALANCE
INITIAL RESET
RST
WBDET
EX TIM
DARK
DIS CHG
WB AUTO
WB INDR
OSC 1
OSC 2
X851
4MHz
3.4Vp-p
IC854 ④
R0
R1
R2
R3
R4
B0
B1
B2
B3
B4
Q858,859,862
Q853,854,857
D-A CONVERTER
R CONT
B CONT
TP851
TP852
0.5Vp-p
IC801 ㊵
H
Ye
G
Cy
R CONT
B CONT
RV004
B GAIN
RV003
R GAIN
C LEVEL
WND+VD
CPED
C PED
R COMP
B COMP
G OUT
RV007
B-Y HUE
RV006
R-Y HUE
R-Y HUE
B-Y HUE
MATRIX
GATE DET
CLP
PED
γ
R-G
B-G
R-Y
B-Y
R-Y OUT
B-Y OUT
Q001,002
Q003,004
LPF
RV009
R-Y GAIN
RV008
B-Y GAIN
TP787
TP788
TP786
TP790
C-γ CONT
OFF SET CONT
RV002
MATRIX GAIN 2
RV001
MATRIX GAIN 1
YL MATRIX 1
YL MATRIX 2
LB
GATE
YL MIX
YL
YH
YL-YH OUT
YH OUT
FL001
Y-γ CONT
YL MIX
CLP 1
SH2
SH3
SH1
4.76MHz
⑲,⑳: 4Vp-p
㉑: 3.6Vp-p
CP-19P BOARD ⑲,⑳,㉑
MODULATOR
SC
DET
BLANKING FADER SUPRESS
C OUT
C IN
BPF
1.2Vp-p
IC801 ⑳
CS-Y
CS AGC
RV806
BURST LEVEL
LALT
4FSC
1/2
1/2 ALT
RV805
HUE
BF
MOD
BURST GATE
FADER
RV804
SYNC LEVEL
YL-YH
YH
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
SYNC CHROMA MIX
VIDEO OUT
Q801
BUFFER
TP801
CN702
FADER CONT
N.C.
WB AUTO
WB INDOR
SYSTEM CONTROL (SS-11)
CN801
CAM OUT
VIDEO (VA-36)
Q802
YH INVERT
SHP CLP
DL801
0.18 usec DELAY
RV807
SHP LEVEL
RV801
Y LEVEL
RV802
WHITE CLIP
RV803
SET UP
BLK
SYNC
CLP 2
5Vp-p
IC801 ⑯

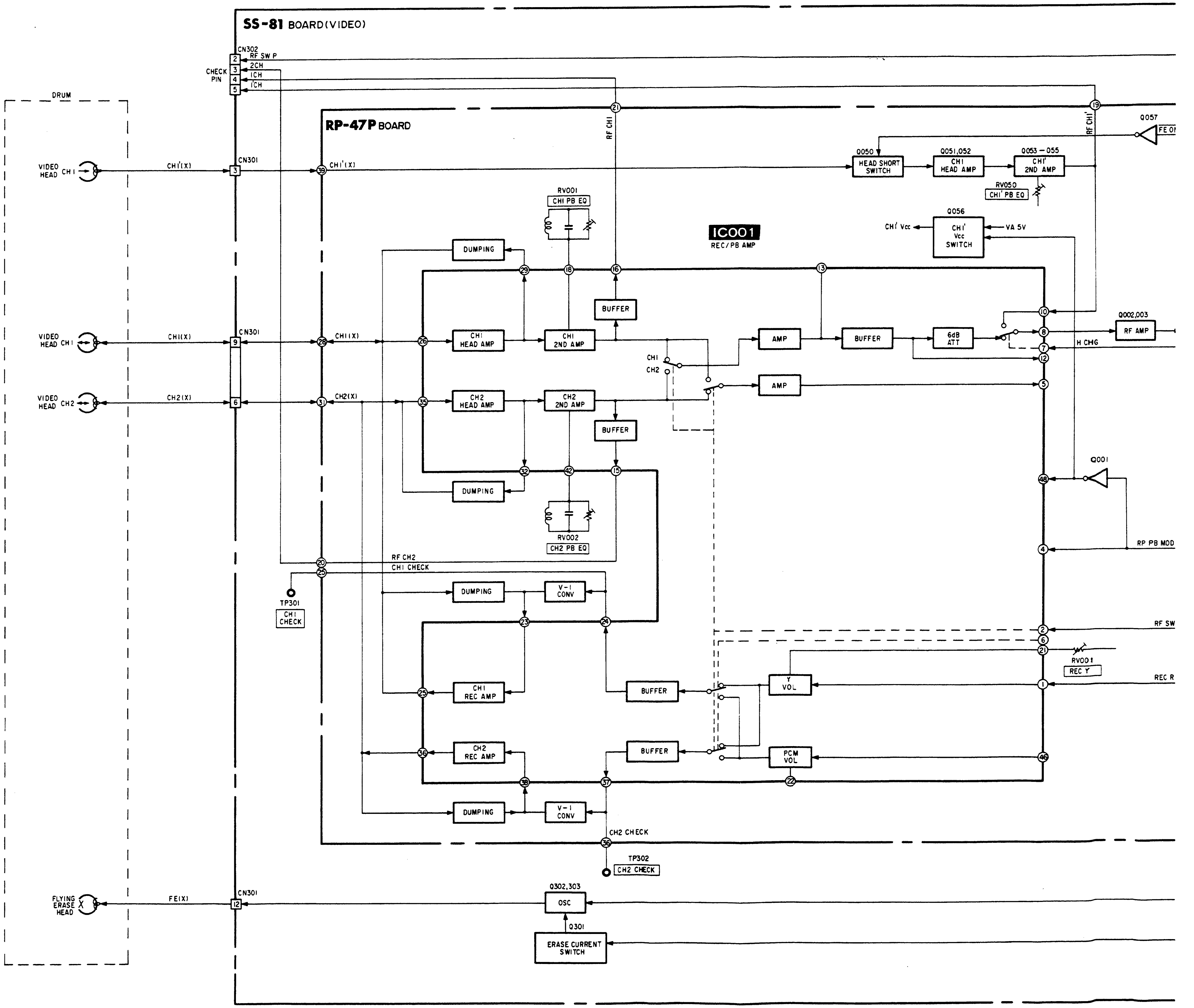
3-4. AUTO FOCUS BLOCK DIAGRAM

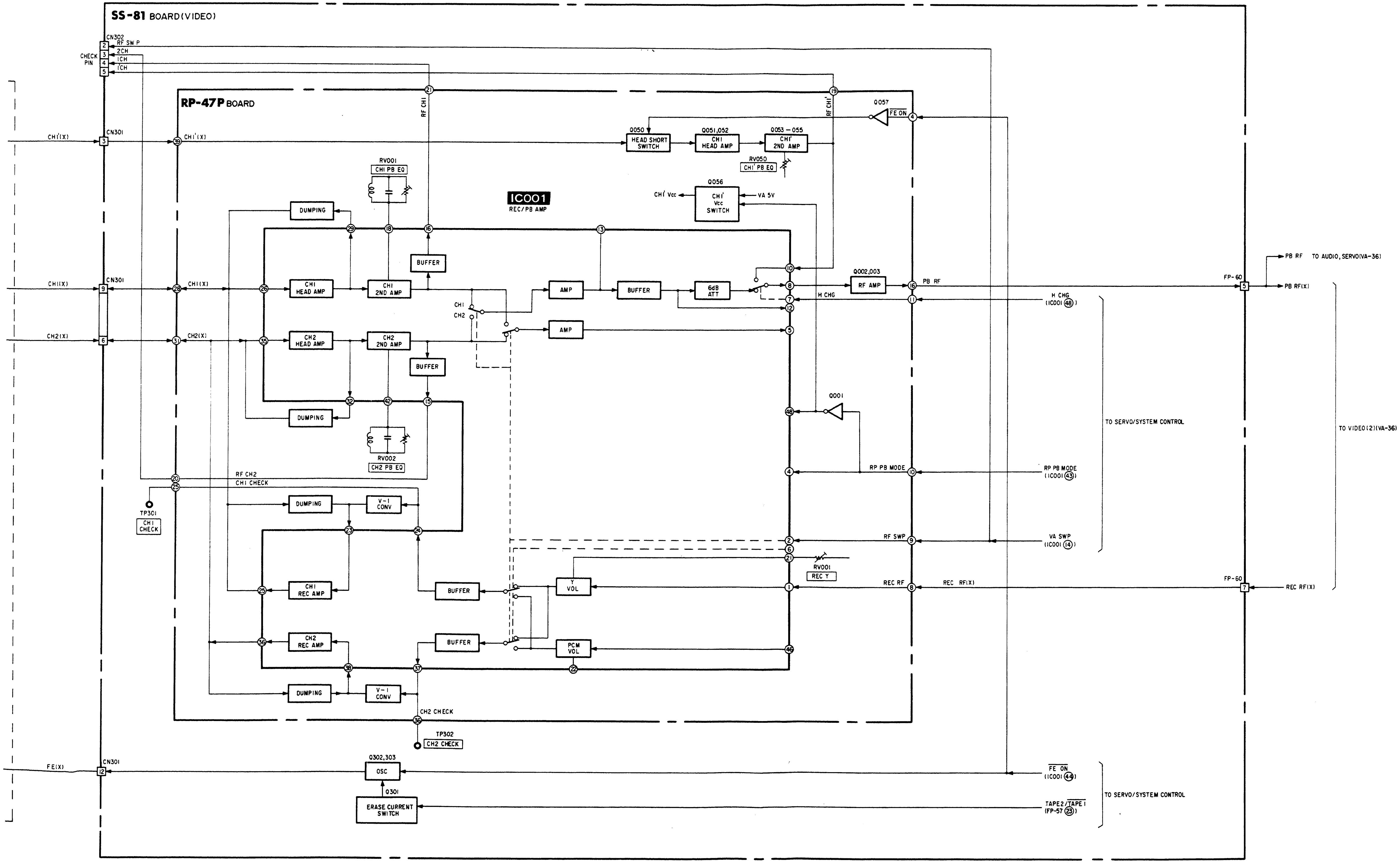


IC004
CCD FOCUS SENSOR
VDD 4
V OUT 3
AGC/V REF 2
ΦT 5
ΦR 7
Φ1 10
Φ3 8
VDD
V OUT
AGC/V REF
ΦT
ΦR
CN001
ZOOM POTENTION UNIT
WIDE
TELE
ZOOM POTENTIAL
CN004
VDD
AF-32 BOARD
IC001
INTERFACE
4 V IN
22 AGC/V REF
23 ΦT
25 ΦR
28 Φ1
26 Φ3
12 M6
VDD 6
NB 0/MUX1 18
NB 3/MUX4 15
OSC 20
BUS CON 19
REF OUT 3
REF TRIM 2
M5 11
RV1
REF TRIM
RV2
XP COMPENTION
VDD
IC002
AUTO FOCUS CPU
2 P10
5 P13
18 T0
24 INT
39 P20
19 X TAL 1
20 X TAL 2
X1 6MHz
VDD 1
Vcc 17
RESET 22
DB 0 30
DB 3 33
DB6 36
DB7 37
F.FOCUS 15
B.FOCUS 14
AF MTR 11
D-A CONVERTER
RV3
IC003
VDD
16 V REG
5.2V REG
3 +IN
MOTOR CONTROL AMP
10 ΦB
9 ΦC

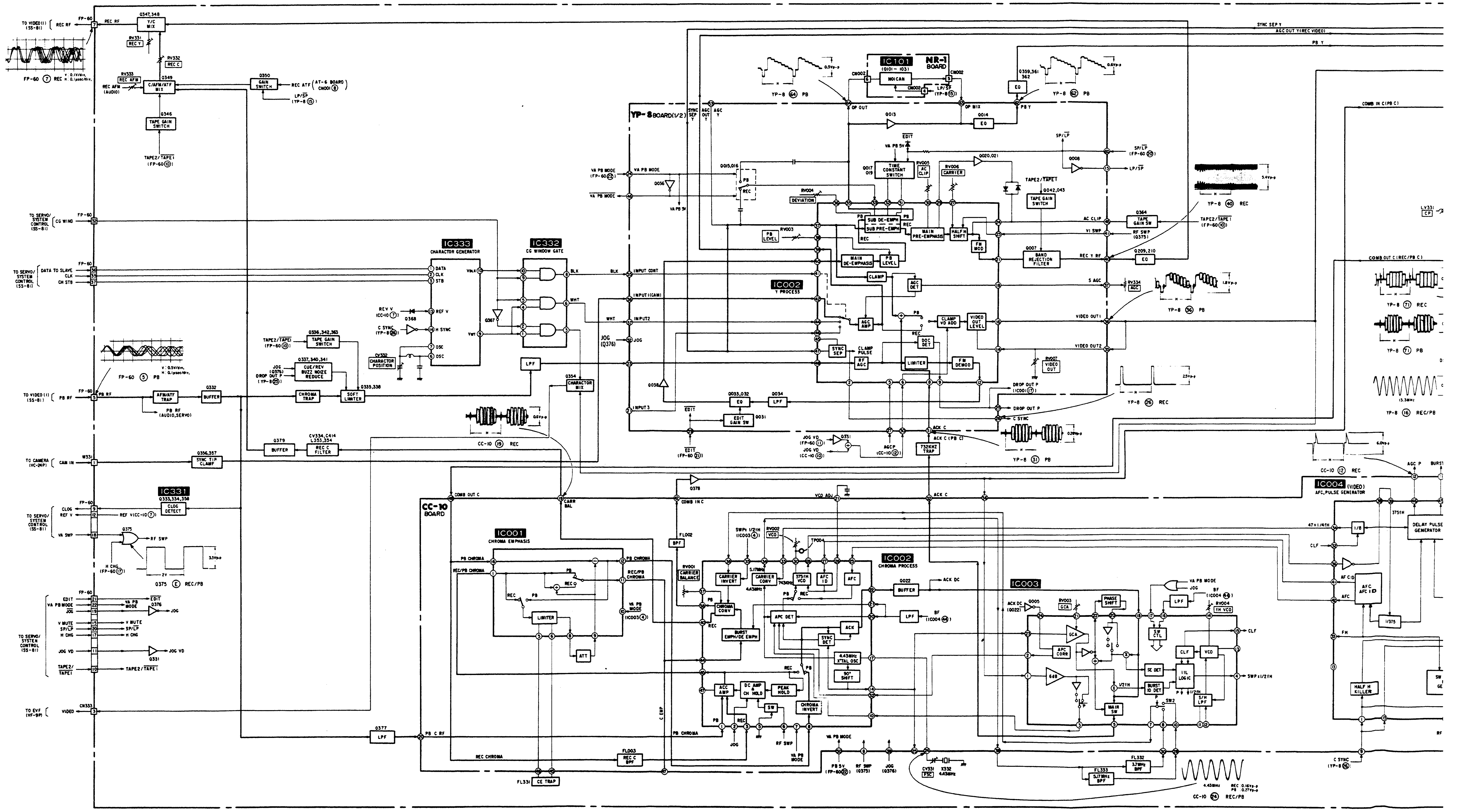

ARD
IC001
INTERFACE
4 V IN
22 AGC/V REF
23 ΦT
25 ΦR
28 Φ1
26 Φ3
12 M6
VDD 6
NB 0/MUX1 18
NB 3/MUX4 15
OSC 20
BUS CON 19
REF OUT 3
REF TRIM 2
M5 11
RV1
REF TRIM
RV2
XP COMPENTION
VDD
IC002
AUTO FOCUS CPU
2 P10
5 P13
18 T0
24 INT
39 P20
X1 6MHz
19 X TAL 1
20 X TAL 2
VDD 1
VCC 17
RESET 22
DB 0 30
DB 3 33
DB6 36
DB7 37
F.FOCUS 15
B.FOCUS 14
AF MTR 11
D-A CONVERTER
RV3
VDD
IC003
16 V REG
5.2V REG
3 +IN
MOTOR CONTROL AMP
FORWARD/ REVERSE SWITCH
10 ΦB
9 ΦC
Vcc 1 15
Vcc 2 11
MB 8
MC 5
Q1,Q2
VOLTAGE LIMITER
CN002
AF UNREG
CN003
AF MTR (−)
AF MTR (+)
M
FOCUS MOTOR
CN002
F.FOCUS
B.FOCUS
AF ON
SYSTEM CONTROL (SS-81)

3-5. VIDEO (1) BLOCK DIAGRAM

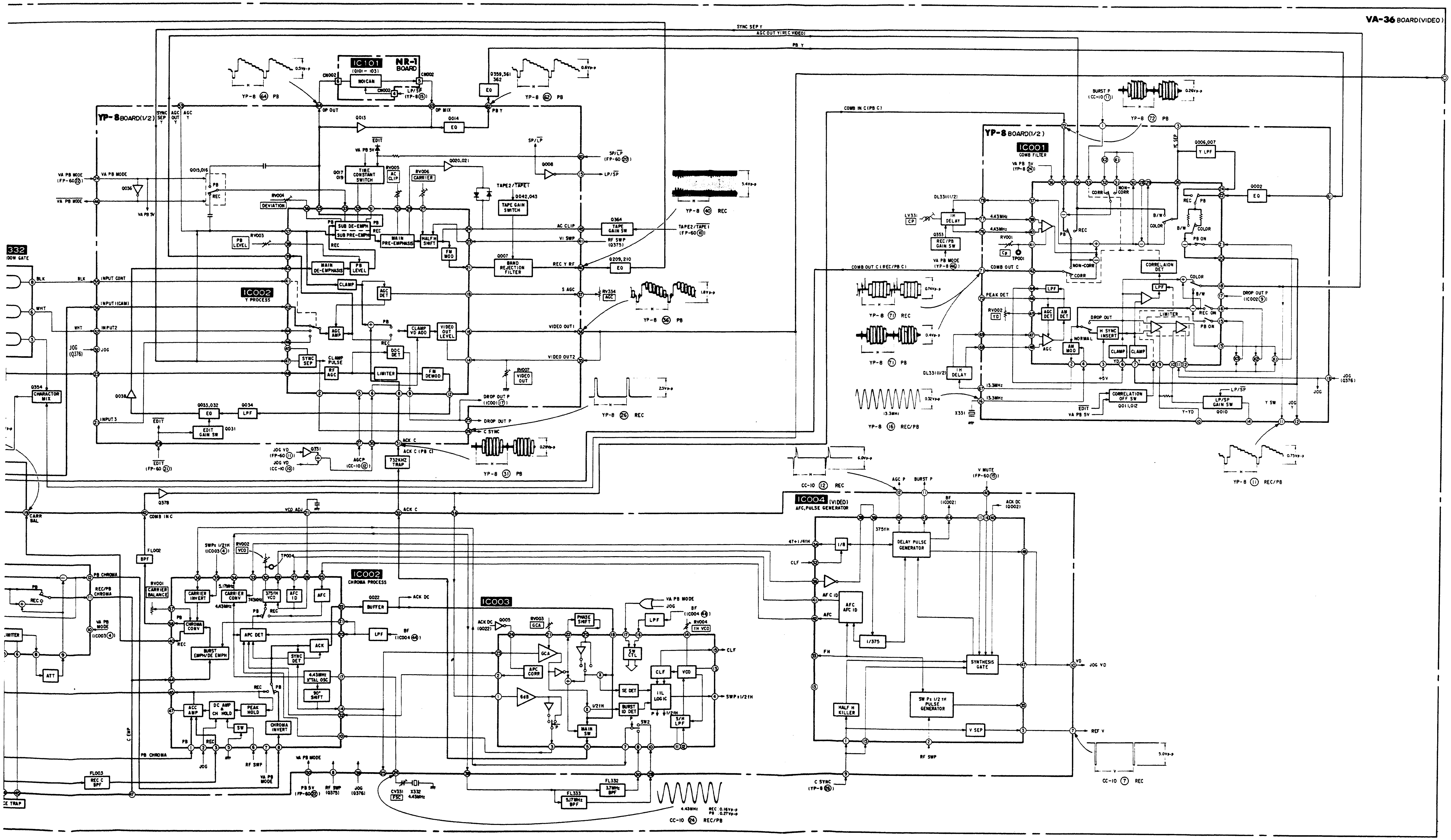

SS-81 BOARD (VIDEO)
RP-47P BOARD
DRUM
VIDEO HEAD CH1'
CH1'(X)
VIDEO HEAD CH1
CH1(X)
VIDEO HEAD CH2
CH2(X)
FLYING ERASE HEAD
FE(X)
CN302
CHECK PIN
RF SW P
2CH
1CH
1'CH
CN301
RF CH1
RF CH1'
RV001
CH1 PB EQ
DUMPING
BUFFER
CH1 HEAD AMP
CH1 2ND AMP
CH2 HEAD AMP
CH2 2ND AMP
CH1
CH2
RV002
CH2 PB EQ
RF CH2
CH1 CHECK
TP301
CH1 CHECK
V-I CONV
CH1 REC AMP
CH2 REC AMP
CH2 CHECK
TP302
CH2 CHECK
IC001
REC/PB AMP
Q050
HEAD SHORT SWITCH
Q051,052
CH1 HEAD AMP
Q053 – 055
CH1' 2ND AMP
RV050
CH1' PB EQ
Q057
FE O
Q056
CH1' Vcc
CH1' Vcc SWITCH
VA 5V
AMP
6dB ATT
Q002,003
RF AMP
H CHG
Q001
RP PB MOD
RF SW
RV001
REC Y
REC R
Y VOL
PCM VOL
Q302,303
OSC
Q301
ERASE CURRENT SWITCH


SS-81 BOARD (VIDEO)
CN302
RF SW P
2CH
1CH
1CH
CHECK PIN
RP-47P BOARD
CN301
CH1'(X)
CH1(X)
CH2(X)
FE(X)
RF CH1
RF CH1'
Q057
FE ON
Q050
HEAD SHORT SWITCH
Q051,052
CH1' HEAD AMP
Q053 – 055
CH1' 2ND AMP
RV050
CH1' PB EQ
Q056
CH1' Vcc
CH1' Vcc SWITCH
VA 5V
IC001
REC/PB AMP
RV001
CH1 PB EQ
DUMPING
BUFFER
CH1 HEAD AMP
CH1 2ND AMP
CH2 HEAD AMP
CH2 2ND AMP
CH1
CH2
AMP
BUFFER
6dB ATT
AMP
Q002,003
RF AMP
PB RF
H CHG
H CHG (IC001 ㊽)
Q001
RP PB MODE
RP PB MODE (IC001 ㊸)
RV002
CH2 PB EQ
RF CH2
CH1 CHECK
TP301
CH1 CHECK
V-I CONV
CH1 REC AMP
CH2 REC AMP
RF SWP
VA SWP (IC001 ⑭)
RV001
REC Y
Y VOL
PCM VOL
REC RF
REC RF(X)
CH2 CHECK
TP302
CH2 CHECK
Q302,303
OSC
Q301
ERASE CURRENT SWITCH
FE ON (IC001 ㊹)
TAPE2/TAPE1 (FP-57 ㉓)
TO SERVO/SYSTEM CONTROL
TO SERVO/SYSTEM CONTROL
FP-60
PB RF TO AUDIO, SERVO(VA-36)
PB RF(X)
TO VIDEO(2)(VA-36)
REC RF(X)

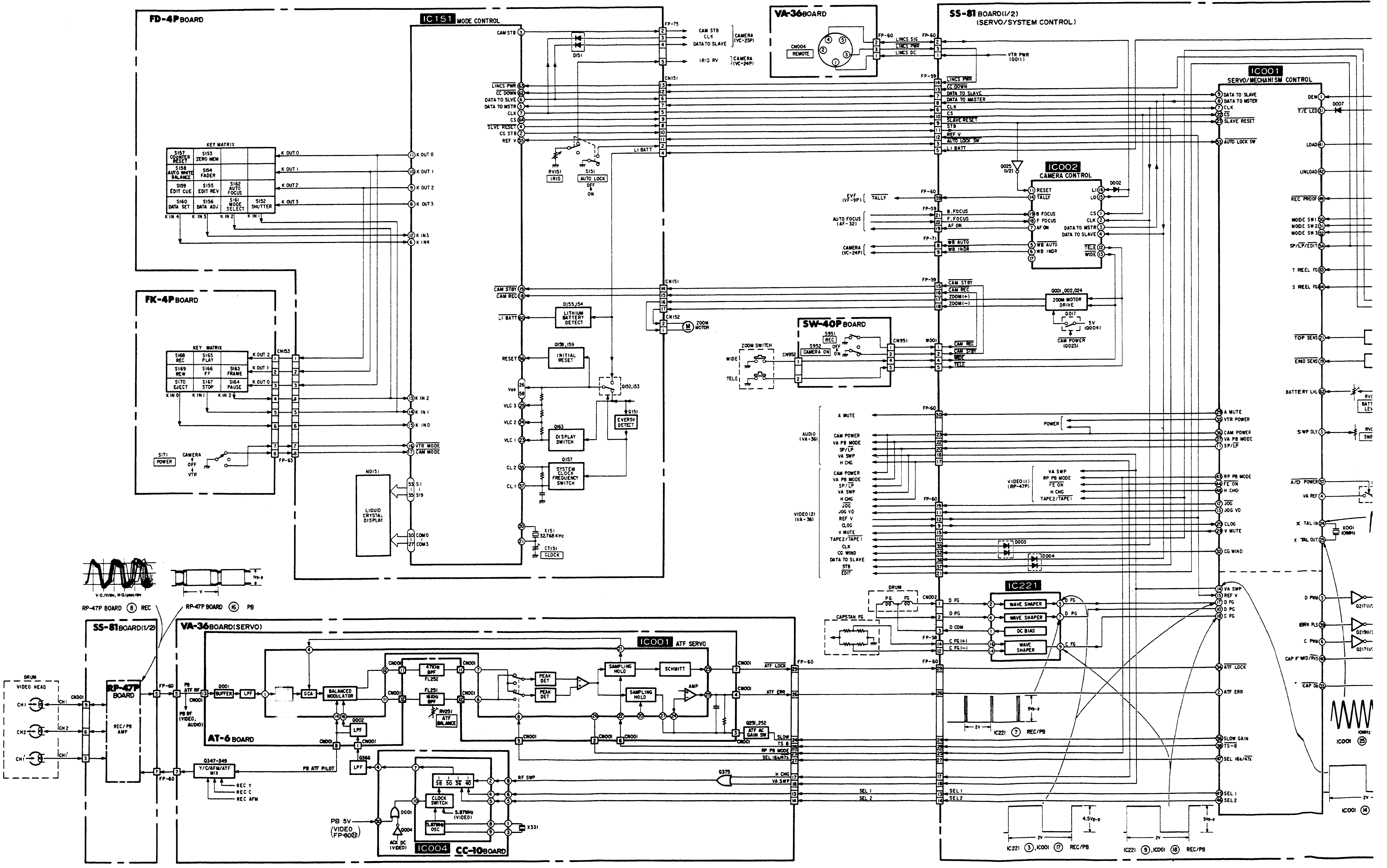
3-6. VIDEO (2) BLOCK DIAGRAM

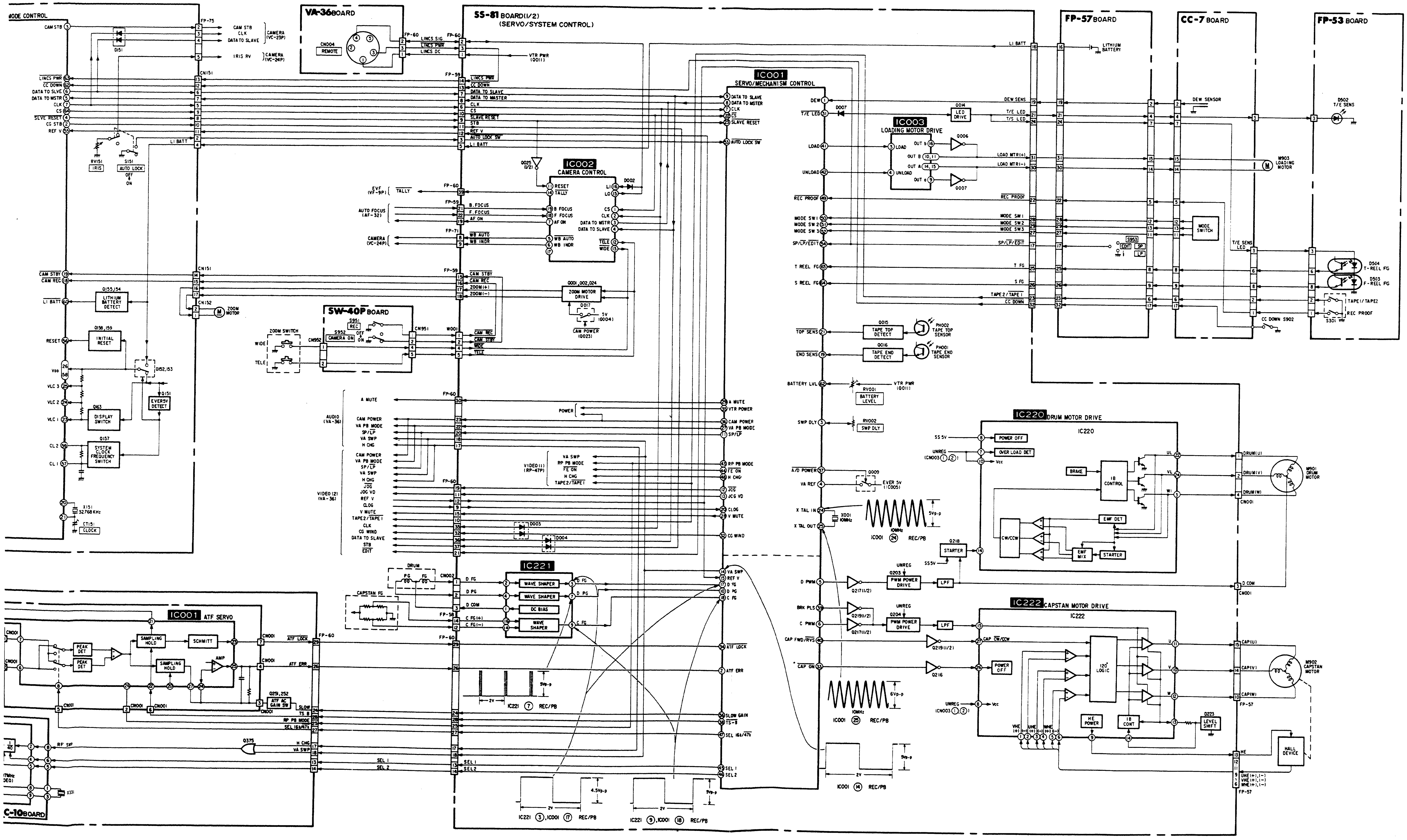


TO VIDEO(1) (SS-81)
REC RF
FP-60
Q347,348 Y/C MIX
RV331 REC Y
RV332 REC C
RV333 REC AFM
Q349 C/AFM/ATF MIX
REC AFM (AUDIO)
Q346 TAPE GAIN SWITCH
TAPE2/TAPE1 (FP-60 ⑩)
Q350 GAIN SWITCH
REC ATF (AT-6 BOARD CN001 ⑧)
LP/SP (YP-8 ⑮)
FP-60 ⑦ REC
TO SERVO/SYSTEM CONTROL (SS-81)
CG WIND
DATA TO SLAVE
CLK
CH STB
IC333 CHARACTOR GENERATOR
IC332 CG WINDOW GATE
DATA
CLK
STB
REF V
H SYNC
OSC
REV V (CC-10 ⑦)
Q368
C SYNC (YP-8 ㉖)
CV332 CHARACTOR POSITION
Q336,342,363 TAPE GAIN SWITCH
TAPE2/TAPE1 (FP-60 ⑩)
Q337,340,341 CUE/REV BUZZ NOIZE REDUCE
JOG (Q376)
DROP OUT P (YP-8 ㉘)
Q335,338
Q367
BLK
WHT
FP-60 ⑤ PB
TO VIDEO(1) (SS-81)
PB RF
AFM/ATF TRAP
PB RF (AUDIO,SERVO)
Q332 BUFFER
CHROMA TRAP
SOFT LIMITER
LPF
Q354 CHARACTOR MIX
Q379 BUFFER
CV334,C414 L353,354 REC C FILTER
CC-10 ⑲ REC
TO CAMERA (VC-24P)
CAM IN
W531
Q356,357 SYNC TIP CLAMP
IC331 Q333,334,358 CLOG DETECT
CLOG
REF V
REF V(CC-10 ⑦)
VA SWP
Q375
RF SWP
H CHG (FP-60 ⑰)
Q375 Ⓔ REC/PB
EDIT
VA PB MODE
JOG
V MUTE
SP/LP
H CHG
JOG VD
Q331
TAPE2/TAPE1
TO EVF (VF-91P)
VIDEO
CN333
Q377 LPF
PB C RF
YP-8 BOARD(1/2)
SYNC SEP Y
AGC OUT Y
AGC Y
VA PB MODE (FP-60 ㉒)
Q036
Q015,016
RV004 DEVIATION
PB LEVEL
RV003
INPUT CONT
INPUT1(CAM)
INPUT2
JOG (Q376)
INPUT3
IC002 Y PROCESS
IC101 (Q101-103) NR-1 BOARD
NOICAN
CN002
YP-8 ㊴ PB
OP OUT
OP MIX
Q013
Q014 EQ
EDIT
VA PB 5V
Q017,019 TIME CONSTANT SWITCH
RV005 AC CLIP
RV006 CARRIER
Q020,021
SUB DE-EMPH
SUB PRE-EMPH
MAIN PRE-EMPHASIS
HALF H SHIFT
FM MOD
MAIN DE-EMPHASIS
PB LEVEL
CLAMP
AGC DET
AGC AMP
CLAMP VD ADD
VIDEO OUT LEVEL
DOC DET
SYNC SEP
CLAMP PULSE
RF AGC
LIMITER
FM DEMOD
Q359,361,362 EQ
YP-8 ㉜ PB
PB Y
SP/LP (FP-60 ㉓)
Q008
LP/SP
TAPE2/TAPE1
Q042,043 TAPE GAIN SWITCH
Q007 BAND REJECTION FILTER
Q364 TAPE GAIN SW
AC CLIP
V1 SWP
RF SWP (Q375)
REC Y RF
Q209,210 EQ
S AGC
RV334 AGC
VIDEO OUT1
VIDEO OUT2
RV007 VIDEO OUT
DROP OUT P (IC001 ⑰)
DROP OUT P
C SYNC
YP-8 ㊵ REC
TAPE2/TAPE1 (FP-60 ⑩)
YP-8 ㊱ PB
YP-8 ㉖ REC
Q033,032 EQ
Q034 LPF
EDIT GAIN SW
Q031
EDIT (FP-60 ㉑)
JOG VD (FP-60 ⑪)
JOG VD (CC-10 ⑩)
Q331
AGCP (CC-10 ⑫)
ACK C
ACK C (PB C)
732KHZ TRAP
YP-8 ㉛ PB
SYNC SEP Y
AGC OUT Y(REC VIDEO)
PB Y
COMB IN C(PB C)
COMB OUT C(REC/PB C)
YP-8 ⑦ REC
YP-8 ⑦ PB
YP-8 ⑯ REC/PB
CC-10 ⑫ REC
CC-10 BOARD
COMB OUT C
CARR BAL
Q378
COMB IN C
VCO ADJ
ACK C
IC001 CHROMA EMPHASIS
PB CHROMA
REC/PB CHROMA
LIMITER
ATT
FL002 BPF
RV001 CARRIER BALANCE
IC002 CHROMA PROCESS
SWP1 1/2H (IC003 ④)
RV002 VCO
TP004
CARRIER INVERT
CARRIER CONV
375fH VCO
AFC ID
AFC
CHROMA CONV
BURST EMPH/DE EMPH
APC DET
ACK
SYNC DET
4.43MHz X'TAL OSC
90° SHIFT
ACC AMP
DC AMP & CH HOLD
PEAK HOLD
SW
CHROMA INVERT
Q022 BUFFER
ACK DC
LPF
BF (IC004 ㉞)
C EMP
PB CHROMA
REC CHROMA
FL003 REC C BPF
FL331 CE TRAP
VA PB MODE
PB 5V (FP-60 ㉒)
RF SWP (Q375)
JOG (Q376)
CV331 FSC
X332 4.43MHz
IC003
ACK DC (Q022)
Q005
RV003 GCA
PHASE SHIFT
GCA
APC CORR
6dB
MAIN SW
SE DET
BURST ID DET
IIL LOGIC
CLF
VCO
S/H LPF
SW2
SW CTL
VA PB MODE
JOG
BF (IC004 ㉞)
RV004 fH VCO
CLF
SWP1 1/2H
FL332 3.7MHz BPF
FL333 5.17MHz BPF
CC-10 ㉔ REC/PB
IC004 (VIDEO) AFC, PULSE GENERATOR
AGC P
BURST
47+1/4fH
CLF
AFC ID
AFC
1/8
375fH
DELAY PULSE GENERATOR
1/375
FH
HALF H KILLER
C SYNC (YP-8 ㉖)
LV331 CP


VA-36 BOARD(VIDEO)
SYNC SEP Y
AGC OUT Y(REC VIDEO)
PB Y
CN332 (1/3) VIDEO OUT
YP-8 BOARD(1/2)
IC101 NR-1 BOARD
NOICAN
LP/SP
EQ
OP OUT
OP MIX
PB Y
YP-8 64 PB
YP-8 62 PB
TIME CONSTANT SWITCH
AC CLIP
CARRIER
DEVIATION
SUB DE-EMPH
SUB PRE-EMPH
MAIN PRE-EMPHASIS
HALF H SHIFT
FM MOD
TAPE GAIN SWITCH
BAND REJECTION FILTER
TAPE GAIN SW
PB LEVEL
MAIN DE-EMPHASIS
CLAMP
AGC DET
IC002 Y PROCESS
AGC AMP
CLAMP VD ADD
VIDEO OUT LEVEL
SYNC SEP
CLAMP PULSE
RF AGC
DOC DET
LIMITER
FM DEMOD
VIDEO OUT
SP/LP
AC CLIP
VI SWP
REC Y RF
S AGC
VIDEO OUT1
VIDEO OUT2
DROP OUT P
C SYNC
ACK C
ACK C (PB C)
732KHZ TRAP
YP-8 40 REC
YP-8 36 PB
YP-8 26 REC
YP-8 31 PB
CHARACTOR MIX
EQ
LPF
EDIT GAIN SW
INPUT CONT
INPUT1(CAM)
INPUT2
INPUT3
JOG
COMB IN C(PB C)
COMB OUT C(REC/PB C)
YP-8 BOARD(1/2)
IC001 COMB FILTER
1H DELAY
REC/PB GAIN SW
NON-CORR
CORR
Y LPF
EQ
CORRELATION DET
LPF
PEAK DET
AGC DET
AM DET
AM MOD
H SYNC INSERT
LIMITER
CLAMP
DROP OUT
CORRELATION OFF SW
LP/SP GAIN SW
YP-8 72 PB
YP-8 71 REC
YP-8 71 PB
YP-8 16 REC/PB
YP-8 11 REC/PB
CC-10 12 REC
IC004 (VIDEO) AFC,PULSE GENERATOR
DELAY PULSE GENERATOR
1/8
AFC AFC ID
1/375
SYNTHESIS GATE
SW P× 1/2 H PULSE GENERATOR
HALF H KILLER
V SEP
REF V
CC-10 7 REC
IC002 CHROMA PROCESS
CARRIER INVERT
CARRIER CONV
375fH VCO
AFC ID
AFC
CARRIER BALANCE
CHROMA CONV
APC DET
BURST EMPH/DE EMPH
SYNC DET
ACK
4.43MHz X'TAL OSC
90° SHIFT
BUFFER
LPF
AGC AMP
DC AMP & CH HOLD
PEAK HOLD
SW
CHROMA INVERT
IC003
GCA
PHASE SHIFT
APC CORR
6dB
MAIN SW
SE DET
BURST ID DET
I1L LOGIC
CLF
VCO
S/H LPF
SW CTL
LPF
1H VCO
JOG VD
SWP±1/2H
REC C BPF
FL332 3.7MHz BPF
FL333 5.17MHz BPF
CC-10 24 REC/PB
ATT
CARR BAL
COMB IN C
PB CHROMA
REC/PB CHROMA
VA PB MODE
RF SWP
C SYNC

3-7. SERVO, SYSTEM CONTROL BLOCK DIAGRAM


FD-4P BOARD
IC151 MODE CONTROL
KEY MATRIX
S157 COUNTER RESET
S153 ZERO MEM
S158 AUTO WHITE BALANCE
S154 FADER
S159 EDIT CUE
S155 EDIT REV
S162 AUTO FOCUS
S160 DATA SET
S156 DATA ADJ
S161 MODE SELECT
S152 SHUTTER
D151
RV151 IRIS
S151 AUTO LOCK
Q155,154 LITHIUM BATTERY DETECT
Q158,159 INITIAL RESET
Q152,153
Q151 EVER5V DETECT
Q163 DISPLAY SWITCH
Q157 SYSTEM CLOCK FREQUENCY SWITCH
X151 32.768KHz
CT151 CLOCK
ND151 LIQUID CRYSTAL DISPLAY
FK-4P BOARD
S168 REC
S165 PLAY
S169 REW
S166 FF
S163 FRAME
S170 EJECT
S167 STOP
S164 PAUSE
S171 POWER
CAMERA OFF VTR
CN151
CN152
ZOOM MOTOR
CAMERA (VC-23P)
CAMERA (VC-24P)
VA-36 BOARD
CN004 REMOTE
SS-81 BOARD(1/2) (SERVO/SYSTEM CONTROL)
IC001 SERVO/MECHANISM CONTROL
IC002 CAMERA CONTROL
D002
Q025 (1/2)
EVF (VF-9P)
TALLY
AUTO FOCUS (AF-32)
CAMERA (VC-24P)
Q001,002,024 ZOOM MOTOR DRIVE
Q017
CAM POWER (Q023)
SW-40P BOARD
S951 REC
S952 CAMERA ON
ZOOM SWITCH
WIDE
TELE
CN951
CN952
AUDIO (VA-36)
VIDEO(2) (VA-36)
VIDEO(1) (RP-47P)
POWER
D003
D004
DRUM PG FG
CAPSTAN FG
CN002
IC221
WAVE SHAPER
DC BIAS
VTR PWR (Q011)
D007
RP-47P BOARD ⑧ REC
RP-47P BOARD ⑯ PB
V:0.1V/div, H:0.1μsec/div
SS-81 BOARD(1/2)
RP-47P BOARD
REC/PB AMP
DRUM VIDEO HEAD
CH1
CH2
CN301
VA-36 BOARD(SERVO)
IC001 ATF SERVO
AT-6 BOARD
Q001 BUFFER
LPF
GCA
BALANCED MODULATOR
47KHz BPF FL252
FL251 161KHz BPF
RV251 ATF BALANCE
PEAK DET
SAMPLING HOLD
SCHMITT
AMP
Q002 LPF
Q251,252 ATF AC GAIN SW
Q347-349 Y/C/AFM/ATF MIX
REC Y
REC C
REC AFM
PB ATF PILOT
Q366 LPF
Q375
CC-10 BOARD
IC004
CLOCK SWITCH
5.87MHz (VIDEO)
5.87MHz OSC
X331
PB 5V (VIDEO FP-60㉓)
ACK DC (VIDEO)
IC221 ⑦ REC/PB
IC221 ③, IC001 ⑰ REC/PB
IC221 ⑨, IC001 ⑱ REC/PB
IC001 ㉕
IC001 ⑭
5Vp-p
4.5Vp-p
2V


MODE CONTROL
VA-36 BOARD
SS-81 BOARD (1/2)
(SERVO/SYSTEM CONTROL)
FP-57 BOARD
CC-7 BOARD
FP-53 BOARD
IC001 SERVO/MECHANISM CONTROL
IC002 CAMERA CONTROL
IC003 LOADING MOTOR DRIVE
SW-40P BOARD
IC221
IC001 ATF SERVO
IC220 DRUM MOTOR DRIVE
IC222 CAPSTAN MOTOR DRIVE
C-10 BOARD
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
M903 LOADING MOTOR
LITHIUM BATTERY
DEW SENSOR
MODE SWITCH
HALL DEVICE
PH002 TAPE TOP SENSOR
PH001 TAPE END SENSOR
D502 T/E SENS
D504 T-REEL FG
D503 F-REEL FG
TAPE1/TAPE2
REC PROOF
CC DOWN S902
ZOOM MOTOR
ZOOM SWITCH
WIDE
TELE
IC001 ㉔ REC/PB
IC001 ㉕ REC/PB
IC001 ⑭ REC/PB
IC221 ⑦ REC/PB
IC221 ③, IC001 ⑰ REC/PB
IC221 ⑨, IC001 ⑱ REC/PB
X001 10MHz
X151 32.768KHz
5Vp-p
6Vp-p
4.5Vp-p
9Vp-p
2V

3-8. SYSTEM CONTROL—CAMERA BLOCK INTERFACE

Signal	I/O	Pin No.	Input/Output Level
$\overline{\text{WB AUTO}}$	O	SS-81board IC002⑤	Changes as follows according to auto white balance button (FD-4P board S158).
$\overline{\text{WB INDR}}$	O	SS-81board IC002⑥	
AF ON	O	SS-81board IC002⑦	"H" when auto focus is ON.
$\overline{\text{TELE}}$	O	SS-81board IC002⑫	"L" when zoom switch TELE of Remote Commander is pressed.
$\overline{\text{WIDE}}$	O	SS-81board IC002⑬	"L" when zoom switch WIDE of Remote Commander is pressed.
$\overline{\text{TALLY}}$	O	SS-81board IC002⑭	"L" when in CAMERA mode and REC mode.
F FOCUS	I	SS-81board IC002⑱	Changes as follows according to results.
B FOCUS	I	SS-81board IC002⑲	
CAM STB	O	FD-4P board IC151③	4V cycle "H" pulse. ( ) Strobe signal for serial data transmission.
CLK	O	FD-4P board IC151⑦	2V cycle "L" Pulse series. ( ) Serial data transmission clock.
DATA TO SLAVE	O	FD-4P board IC151⑥	2V cycle pulse series. ( ) Serial data transmission.

EVF display	(AUTO)	OUT DOOR	IN DOOR
$\overline{\text{WB AUTO}}$	L	H	H
$\overline{\text{WB INDR}}$	H	H	L

	Focus too close	Just focus	Focus too far	Impossible to measure
F FOCUS	L	L	H	H
B FOCUS	H	L	L	H

3-9. SYSTEM CONTROL—VIDEO, AUDIO BLOCK INTERFACE

Signal	I/O	Pin No.	VTR mode					
			STOP	FF	REW	FR SEARCH		PB
						CUE	REVIEW	
$\mathrm{SP}/\overline{\mathrm{LP}}$	O	SS-81board IC001⑪	*11	*11	*11	* 1	* 1	* 2
$\overline{\text{JOG}}$	O	SS-81board IC001⑫	H	H	H	L	L	H
JOG VD	O	SS-81board IC001⑬	L	L	L	* 3	* 3	L
RF SWP	O	SS-81board IC001⑭	H/L	* 4	* 4	* 4	* 4	* 4
REF V	O	SS-81board IC001⑮	* 5	* 5	* 5	L	L	L
CLOG	I	SS-81board IC001⑳	H	* 6	* 6	* 6	* 6	* 6
VA PB MODE	O	SS-81board IC001㉗	L	L	L	H	H	H
V MUTE	O	SS-81board IC001㉘	L	L	L	L	L	L * 7
A MUTE	O	SS-81board IC001㉙	L	L	L	H	H	L * 7
CG WIND	O	SS-81board IC001㉜	H	H	H	H	H	H
CAM PWR	O	SS-81board IC001㊱	L	L	L	L	L	L
H CHG	O	SS-81board IC001㊽	L	L	L	L	L	L
RP PB MODE	O	SS-81board IC001㊸	H	H	H	H	H	H
$\overline{\text{FE ON}}$	O	SS-81board IC001㊹	H	H	H	H	H	H
$\mathrm{TAPE2}/\overline{\mathrm{TAPE1}}$	O	FP-53board S301	"L" when using MP type tape.					
$\overline{\text{EDIT}}$	O	FP-57board S953	"L" when EDIT switch (FP-57 board S953) is turuned ON.					
DATA TO SLAVE	O	FD-4P board IC151⑥	V cycle "L" pulse series (VTR mode)					
CLK	O	FD-4P board IC151⑦	V cycle "L" pulse series (VTR mode)					
CG STB	O	FD-4P board IC151②	L	L	L	L	L	L

* 1 Outputs identification results is PB mode immediately preceding. SP mode "H" , LP mode "L" .

* 2 Outputs identification results of playback tape recording mode (SP/LP). SP mode "H" , LP mode "

* 3 False VD signal (V cylce "H" pulse)

* 4 25Hz 50% duty pulse. Synchronized to drum rotation.

* 5 V cycle "L" pulse separated from camera video signal.

* 6 "H" at tape no signal portion or dropout portion. Input for head clogging detection.

* 7 "H" at tape no signal portion.

* 8 V cycle pulse

* 9 2V cycle pulse ( ).

* 10 2V cycle pulse series.

* 11 By the SP/LP selector (FP-57 board S953). SP mode "H" , LP mode "L" .

3-9. SYSTEM CONTROL—VIDEO, AUDIO BLOCK INTERFACE

Signal	I/O	Pin No.	VTR mode										CAMERA mode			
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB•PAUSE	FRAME	STAND-BY	EDIT CUE	EDIT REVIEW	REC
						CUE	REVIEW		CUE	REVIEW						
SP/$\overline{\text{LP}}$	O	SS-81board IC001⑪	∗11	∗11	∗11	∗ 1	∗ 1	∗ 2	∗ 1	∗ 1	∗ 1	∗ 1	∗11	∗11	∗11	∗11
$\overline{\text{JOG}}$	O	SS-81board IC001⑫	H	H	H	L	L	H	L	L	L	L	H	L	L	H
JOG VD	O	SS-81board IC001⑬	L	L	L	∗ 3	∗ 3	L	∗ 3	∗ 3	∗ 3	∗ 3	L	∗ 3	∗ 3	L
RF SWP	O	SS-81board IC001⑭	H/L	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4
REF V	O	SS-81board IC001⑮	∗ 5	∗ 5	∗ 5	L	L	L	L	L	L	L	∗ 5	L	L	∗ 5
CLOG	I	SS-81board IC001⑳	H	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6		∗ 6	∗ 6	H
VA PB MODE	O	SS-81board IC001㉗	L	L	L	H	H	H	H	H	H	H	L	H	H	L
V MUTE	O	SS-81board IC001㉘	L	L	L	L	L	L ∗ 7	L	L	L	L	L	L	L	L
A MUTE	O	SS-81board IC001㉙	L	L	L	H	H	L ∗ 7	H	H	H	H	L	H	H	L
CG WIND	O	SS-81board IC001㉜	H	H	H	H	H	H	H	H	H	H	∗ 8	∗ 8	∗ 8	∗ 8
CAM PWR	O	SS-81board IC001㊱	L	L	L	L	L	L	L	L	L	L	H	H	H	H
H CHG	O	SS-81board IC001㊽	L	L	L	L	L	L	L	L	∗ 9	∗ 9	L	L	L	L
RP PB MODE	O	SS-81board IC001㊸	H	H	H	H	H	H	H	H	H	H	H	H	H	L
$\overline{\text{FE ON}}$	O	SS-81board IC001㊹	H	H	H	H	H	H	H	H	H	H	H	H	H	L
TAPE2/$\overline{\text{TAPE1}}$	O	FP-53board S301	"L" when using MP type tape.													
$\overline{\text{EDIT}}$	O	FP-57board S953	"L" when EDIT switch (FP-57 board S953) is turuned ON.													
DATA TO SLAVE	O	FD-4P board IC151 ⑥	V cycle "L" pulse series (VTR mode)										"L" pulse series (CAMERA mode)			
CLK	O	FD-4P board IC151 ⑦	V cycle "L" pulse series (VTR mode)										"L" pulse series (CAMERA mode)			
CG STB	O	FD-4P board IC151 ②	L	L	L	L	L	L	L	L	L	L	∗ 10	∗ 10	∗ 10	∗ 10

∗ 1 Outputs identification results is PB mode immediately preceding. SP mode "H" , LP mode "L" .

∗ 2 Outputs identification results of playback tape recording mode (SP/LP). SP mode "H" , LP mode "L" .

∗ 3 False VD signal (V cylce "H" pulse)

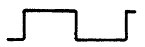
∗ 4 25Hz 50% duty pulse. Synchronized to drum rotation.

∗ 5 V cycle "L" pulse separated from camera video signal.

∗ 6 "H" at tape no signal portion or dropout portion. Input for head clogging detection.

∗ 7 "H" at tape no signal portion.

∗ 8 V cycle pulse

∗ 9 2V cycle pulse ().

∗ 10 2V cycle pulse series.

∗ 11 By the SP/LP selector (FP-57 board S953). SP mode "H" , LP mode "L" .

3-10. SYSTEM CONTROL—SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	I/O	Pin No.	VTR MODE										CAMERA MODE			
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB•PAUSE	FRAME	STAND-BY	EDIT CUE	EDIT REV	REC
						CUE	REVIEW		CUE	REVIEW						
ATF ERR	I	SS-81board IC001②		* 1	* 1	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 1	
SWP DLY * 3	I	SS-81board IC001③														
D PWM	O	SS-81board IC001⑤	L	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4
C PWM	O	SS-81board IC001⑥	L	* 5	* 5	* 5	* 5	* 5	* 5	* 5	L	* 5	L	* 5	* 5	* 5
D PG	I	SS-81board IC001⑩	L	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6
RF SWP	O	SS-81board IC001⑭	H/L	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7
REF V	I	SS-81board IC001⑮	* 8	* 8	* 8	L	L	L	L	L	L	L	* 8	L	L	* 8
D FG	I	SS-81board IC001⑰	H	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9	* 9
C FG	I	SS-81board IC001⑱	H/L	* 10	* 10	* 11	* 12	* 13	* 11	* 12	H/L	* 14	H/L	* 13	* 13	* 13
$\overline{\text{CAP ON}}$	O	SS-81board IC001㉝	H	L	L	L	L	L	L	L	L	L	L	L	L	L
$\overline{\text{ATF LOCK}}$	I	SS-81board IC001㉞		H	H	H	H	L	H	H	H	H	H	L	L	H
$\overline{\text{TS B}}$	O	SS-81board IC001㊳	H	H	H	H	H	* 15	H	H	H	H	H	* 15	* 16	H
CAP BRK	O	SS-81board IC001㊴	L	L	L	L	L	L	L	L	L	* 17	L	L	L	L
CAP FWD/$\overline{\text{RVS}}$	O	SS-81board IC001㊵	H	H	L	H	L	H	H	L	H	H	H	H	L	H
SEL1	O	SS-81board IC001㊺	L	L	L	* 18	* 19	* 15	* 18	* 19	H	* 20	L	* 15	* 16	* 21
SEL2	O	SS-81board IC001㊻	L	L	L	* 18	* 19	* 15	* 18	* 19	H/L	* 20	H	* 15	* 16	* 21
SEL 16K/$\overline{\text{47K}}$	O	SS-81board IC001㊼	L	L	L	* 18	* 19	* 15	* 18	* 19	L	* 20	L	* 15	* 16	L
SLOW GAIN	O	SS-81board IC001(56)	L	L	L	L	L	L	L	L	H	H	L	L	L	L

* 1 Fixed voltage approx. 2V DC.
* 2 ATF error voltage
* 3 DC voltage set by RV002 is input.
* 4 43μsec cycle PWM wave. Duty ratio changes according to drum error signal.
* 5 43μsec cycle PWM wave. Duty ratio changes according to capstan error signal.
* 6 V cycle "H" pulse ( )
* 7 25Hz 50% duty pulse ( ). Synchronized to drum rotation.
* 8 V cycle "L" pulse separated from camera video signal.
* 9 600Hz pulse
* 10 Approx. 17300Hz pulse
* 11 Approx. 8380Hz pulse (SP mode)
* 12 Approx. 7660Hz pulse (SP mode)
* 13 Approx. 1152Hz pulse (SP mode)
* 14 Pulse input during step-by-step
* 15 Refer to Timing Chart 1
* 16 Refer to Timing Chart 2
* 17 "H" pulse output during step-by-step
* 18 Refer to Timing Chart 3
* 19 Refer to Timing Chart 4
* 20 Pulse output during step-by-step
* 21 Refer to Timing Chart 5

3-10-1. Ti

3-10-2.

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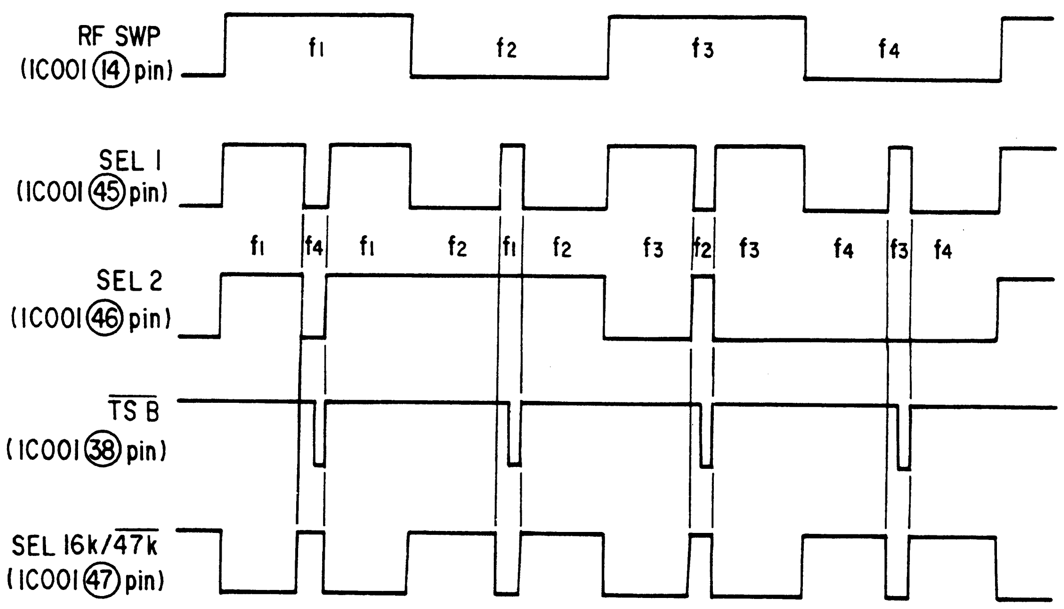
VTR MODE							CAMERA MODE			
R SEARCH		PB	PICTURE SEARCH		PB•PAUSE	FRAME	STAND-BY	EDIT CUE	EDIT REV	REC
E	REVIEW		CUE	REVIEW						
	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 1	
	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4
	∗ 5	∗ 5	∗ 5	∗ 5	L	∗ 5	L	∗ 5	∗ 5	∗ 5
	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6
	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7
	L	L	L	L	L	L	∗ 8	L	L	∗ 8
	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9
1	∗ 12	∗ 13	∗ 11	∗ 12	H/L	∗ 14	H/L	∗ 13	∗ 13	∗ 13
	L	L	L	L	L	L	L	L	L	L
	H	L	H	H	H	H	H	L	L	H
	H	∗ 15	H	H	H	H	H	∗ 15	∗ 16	H
	L	L	L	L	L	∗ 17	L	L	L	L
	L	H	H	L	H	H	H	H	L	H
8	∗ 19	∗ 15	∗ 18	∗ 19	H	∗ 20	L	∗ 15	∗ 16	∗ 21
8	∗ 19	∗ 15	∗ 18	∗ 19	H/L	∗ 20	H	∗ 15	∗ 16	∗ 21
8	∗ 19	∗ 15	∗ 18	∗ 19	L	∗ 20	L	∗ 15	∗ 16	L
	L	L	L	L	H	H	L	L	L	L

or signal.

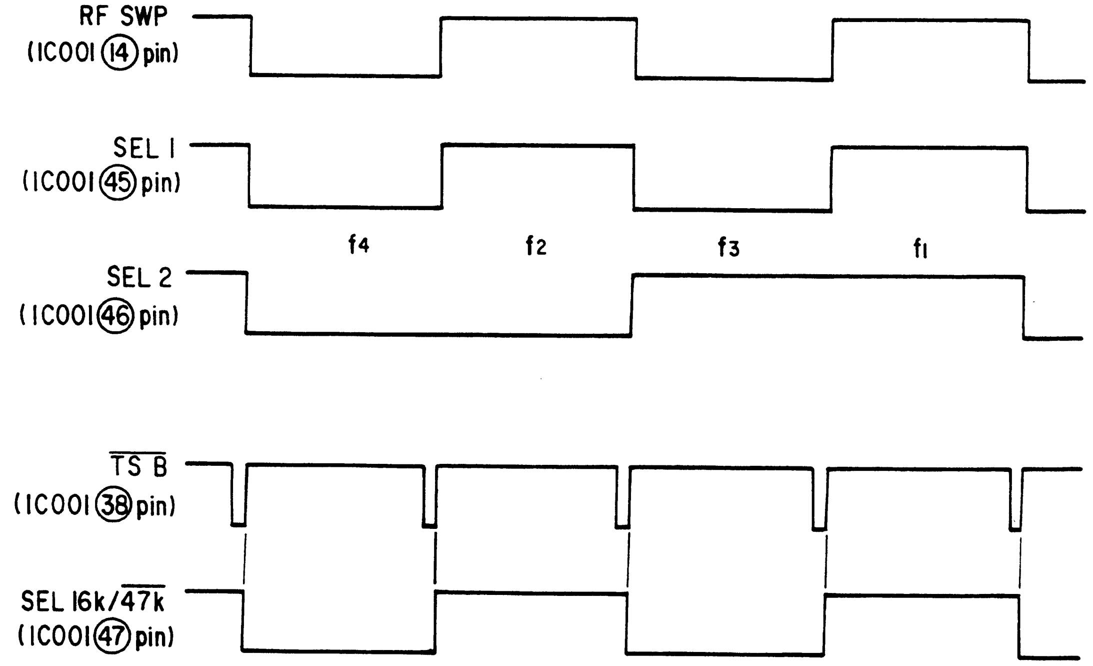
rror signal.

tion.

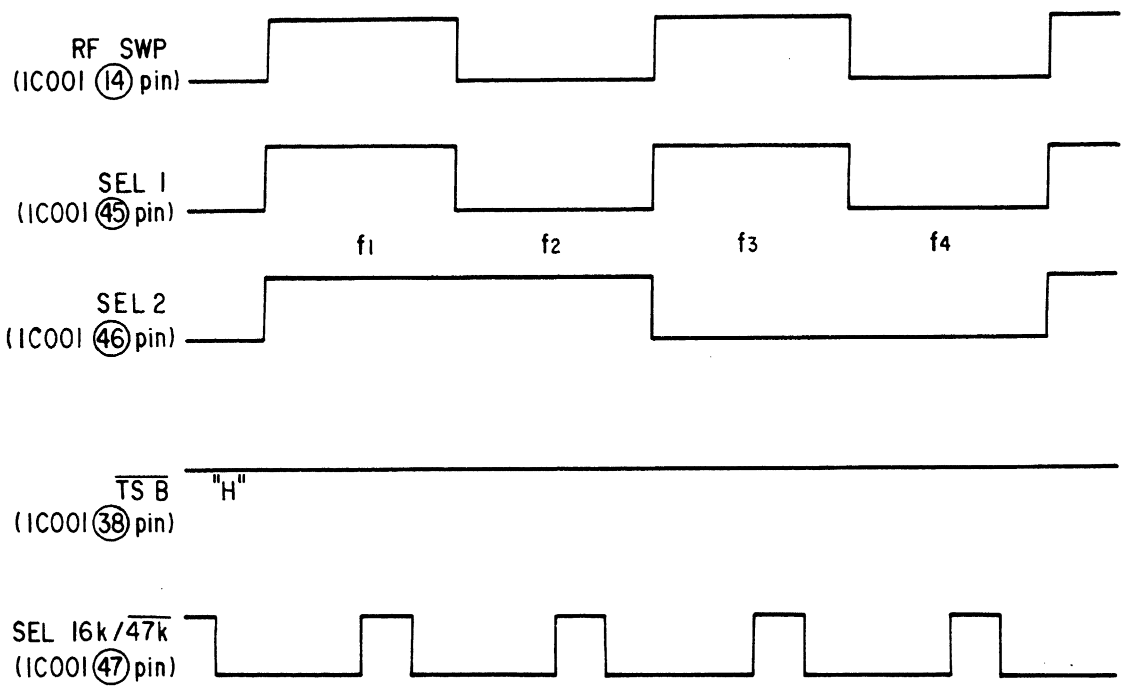
3-10-1. Timing chart 1 (PB, EDIT CUE)


RF SWP
(IC001 ⑭ pin)
f1
f2
f3
f4
SEL 1
(IC001 ㊺ pin)
f1
f4
f1
f2
f1
f2
f3
f2
f3
f4
f3
f4
SEL 2
(IC001 ㊻ pin)
TS B
(IC001 ㊳ pin)
SEL 16k/47k
(IC001 ㊼ pin)

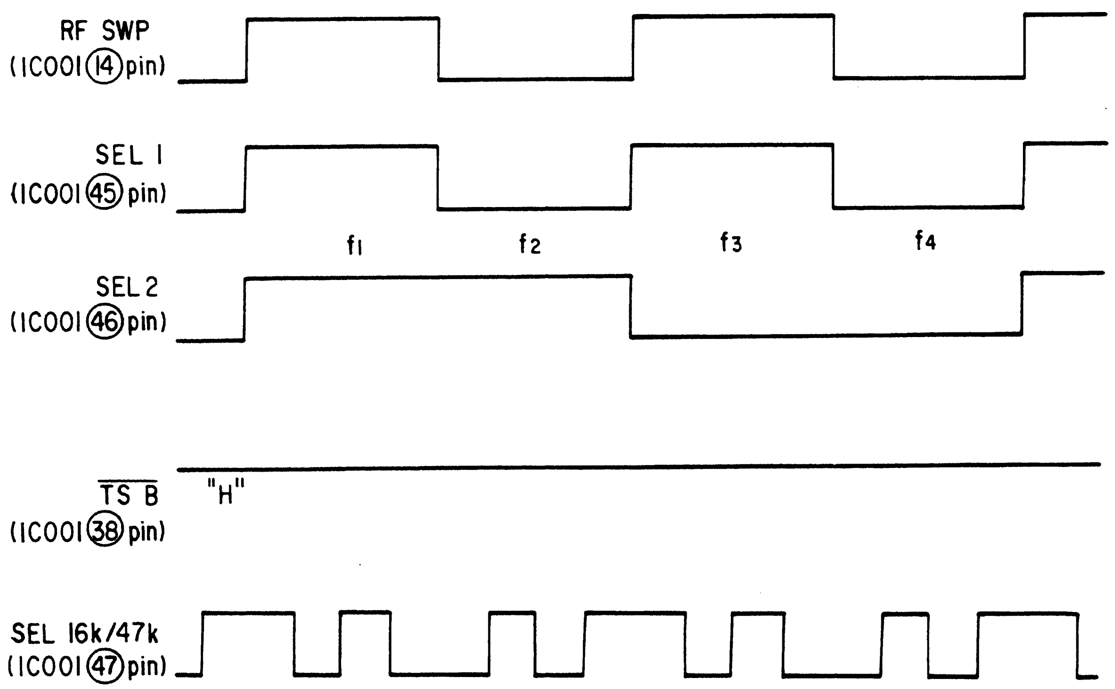
3-10-2. Timing chart 2 (EDIT REVIEW)


RF SWP
(IC001 ⑭ pin)
SEL 1
(IC001 ㊺ pin)
f4
f2
f3
f1
SEL 2
(IC001 ㊻ pin)
TS B
(IC001 ㊳ pin)
SEL 16k/47k
(IC001 ㊼ pin)

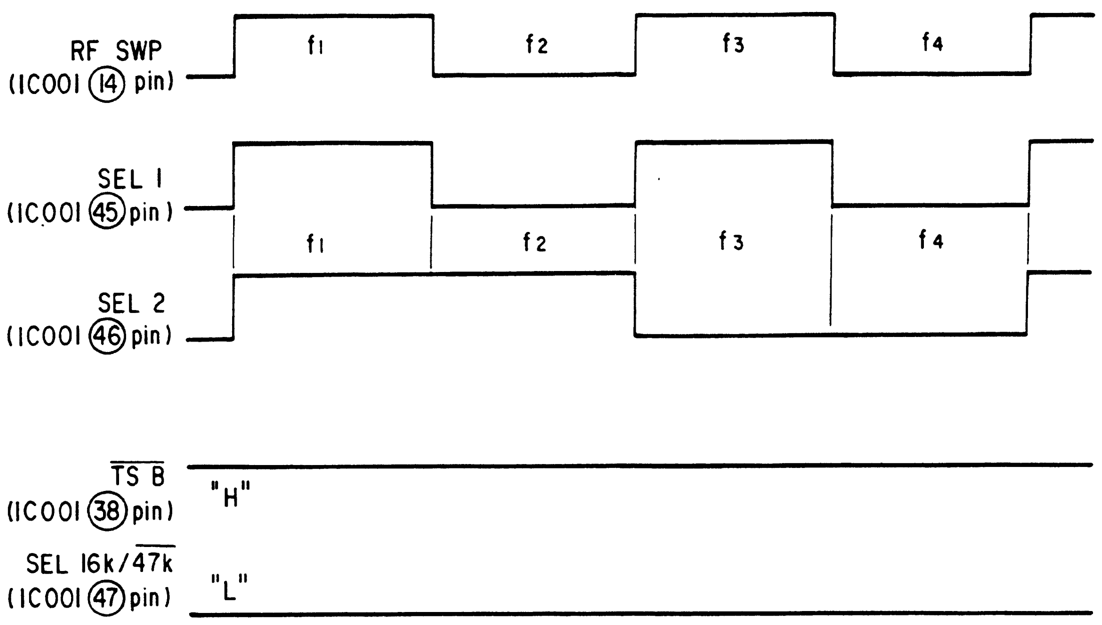
3-10-3. Timing chart 3 (CUE)


RF SWP
(IC001 ⑭ pin)
SEL 1
(IC001 ㊺ pin)
f1
f2
f3
f4
SEL 2
(IC001 ㊻ pin)
$\overline{\text{TS B}}$
"H"
(IC001 ㊳ pin)
SEL 16k/$\overline{\text{47k}}$
(IC001 ㊼ pin)

3-10-4. Timing chart 4 (REVIEW)


RF SWP
(IC001 ⑭ pin)
SEL 1
(IC001 ㊺ pin)
f1
f2
f3
f4
SEL 2
(IC001 ㊻ pin)
$\overline{\text{TS B}}$
"H"
(IC001 ㊳ pin)
SEL 16k/47k
(IC001 ㊼ pin)

3-10-5. Timing chart 5 (REC)

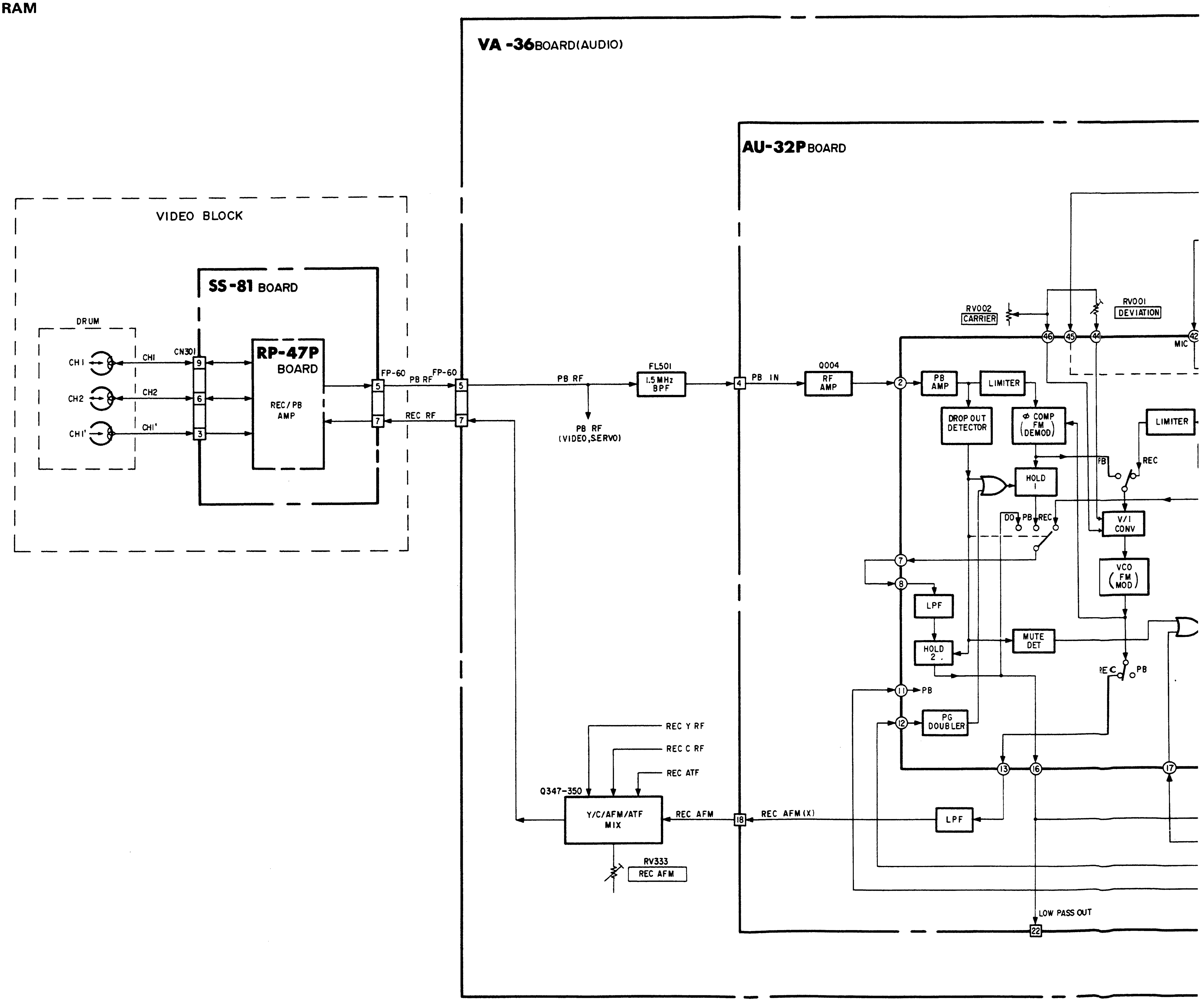

RF SWP
(IC001 ⑭ pin)
f1
f2
f3
f4
SEL 1
(IC001 ㊺ pin)
f1
f2
f3
f4
SEL 2
(IC001 ㊻ pin)
$\overline{\text{TS B}}$
(IC001 ㊳ pin)
"H"
SEL 16k/$\overline{\text{47k}}$
(IC001 ㊼ pin)
"L"

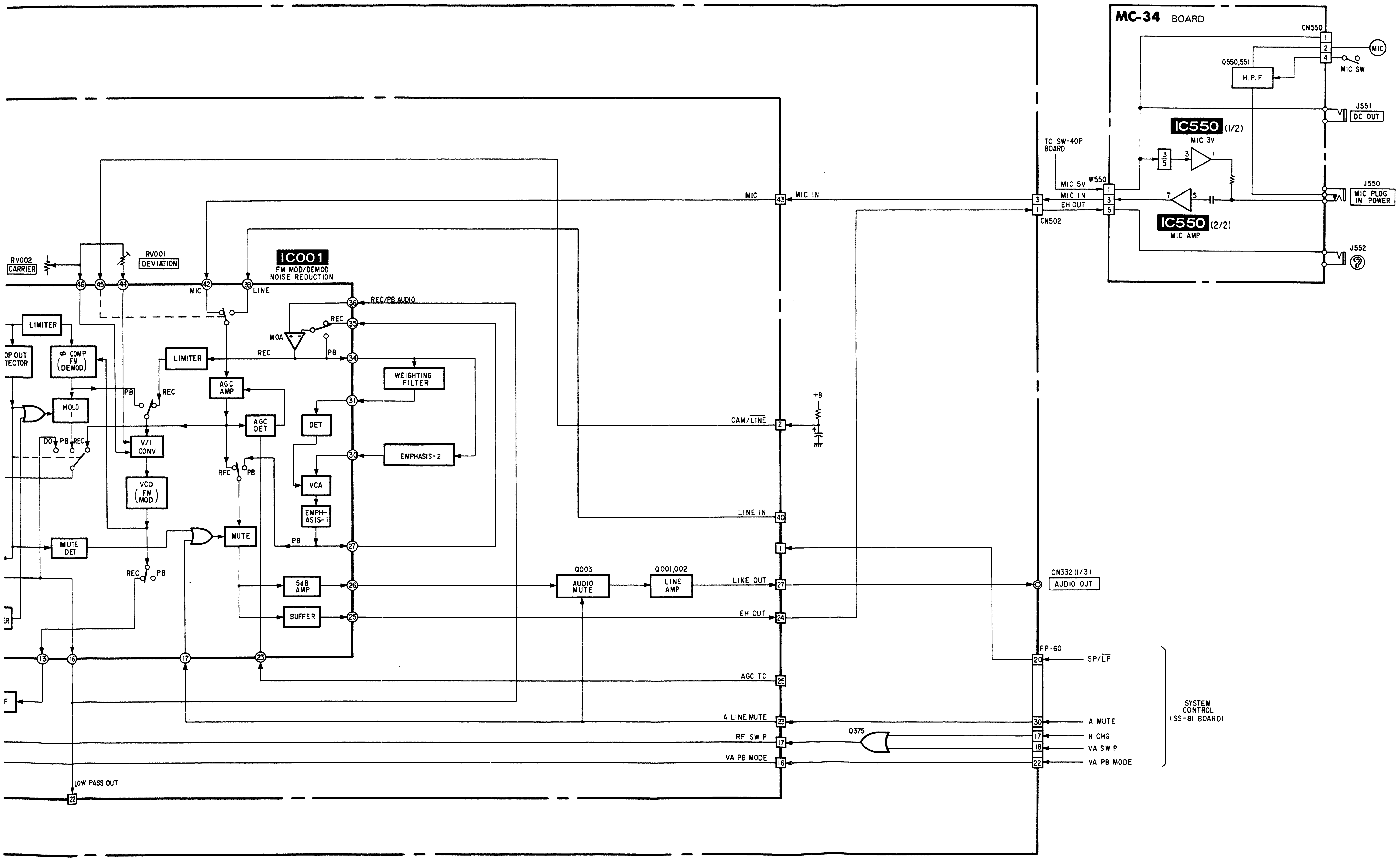
3-11. SYSTEM CONTROL—PERIPHERAL CIRCUIT INTERFACE

Signal	I/O	Pin No.	Input/Output Level
DEW	I	SS-81board IC001 ①	Dew sensor input. Input voltage increases when there is dew.
VA REF	I	SS-81board IC001 ④	Reference voltage input (5V DC) for A-D conversion of pin ① (DEW), pin ② (ATF ERR) and pin ③ (SWP DLY) input analog voltage (0-5V DC).
CLK	I	SS-81board IC001 ⑦	Clock input from serial data transmission mode control (FD-4P board IC151). V cycle "L" pulse ( ) in VTR mode.
DATA TO MASTER	O	SS-81board IC001 ⑧	Serial data output to mode control. V cycle "L" pulse ( ) in VTR mode.
DATA TO SLAVE	I	SS-81board IC001 ⑨	Serial data input from mode control. V cycle "L" pulse ( ) in VTR mode.
$\overline{\text{END SENS}}$	I	SS-81board IC001⑲	TAPE END sensor (SS-81 board PH001) input. "L" pulse input at tape end. Normally "H" .
$\overline{\text{TOP SENS}}$	I	SS-81board IC001㉑	TAPE TOP sensor (SS-81 board PH002) input. "L" pulse input at tape top. Normally "H" .
$\overline{\text{CS}}$	I	SS-81board IC001㉒	Serial signal chip select signal input from mode control. V cycle pulse ( ).
$\overline{\text{SLAVE RESET}}$	I	SS-81board IC001㉓	Reset signal input from mode control. Goes "L" when power is turned ON/OFF and servo/mechanism control (SS-81 board IC001) is reset.
$\overline{\text{T/E LED}}$	O	SS-81board IC001㉛	Pulse output ( ) for lighting up T/E SENS LED (FP-53 board D502). REC/PB 100msec cycle. CUE/REVIEW 17msec cycle. FF/REW 3msec cycle. "L" when LED is lit up.
VTR POWER	O	SS-81board IC001㉟	VTR power ON/OFF signal output. "H" during VTR mode and CAMERA mode. Operates DC-DC converter, and generates VTR 5V.
CAM POWER	O	SS-81board IC001㊱	Camera power ON/OFF signal output. "H" during CAMERA mode. Operates DC-DC converter and generates voltages used for camera.
$\overline{\text{A/D POWER}}$	O	SS-81board IC001㊲	A-D conversion reference voltage (IC001 pin ④) ON/OFF signal output. "H" when power is OFF.
LOAD	O	SS-81board IC001㊶	"H" during cassette loading.
UNLOAD	O	SS-81board IC001㊷	"H" during cassette eject.
$\overline{\text{REC PROOF}}$	I	SS-81board IC001㊾	"H" when cassette which can not be recorded (erase prevention) is inserted.
M SW1	I	SS-81board IC001㊿	Mode switch input for mechanism. Indicates mechanism position.
M SW2	I	SS-81board IC001(51)	
M SW3	I	SS-81board IC001(52)	
$\overline{\text{AUTO LOCK SW}}$	I	SS-81board IC001(53)	AUTO LOCK switch (FD-4P board S151) input. "L" when camera is used in full auto.
BATTERY LEVEL	I	SS-81board IC001(62)	Main battery voltage level detection input.
T REEL FG	I	SS-81board IC001(63)	T REEL FG (FP-53 board D504) input. Pulse corresponds to S reel rotation.
S REEL FG	I	SS-81board IC001(64)	S REEL FG (FP-53 board D503) input. Pulse corresponds to S reel rotation.

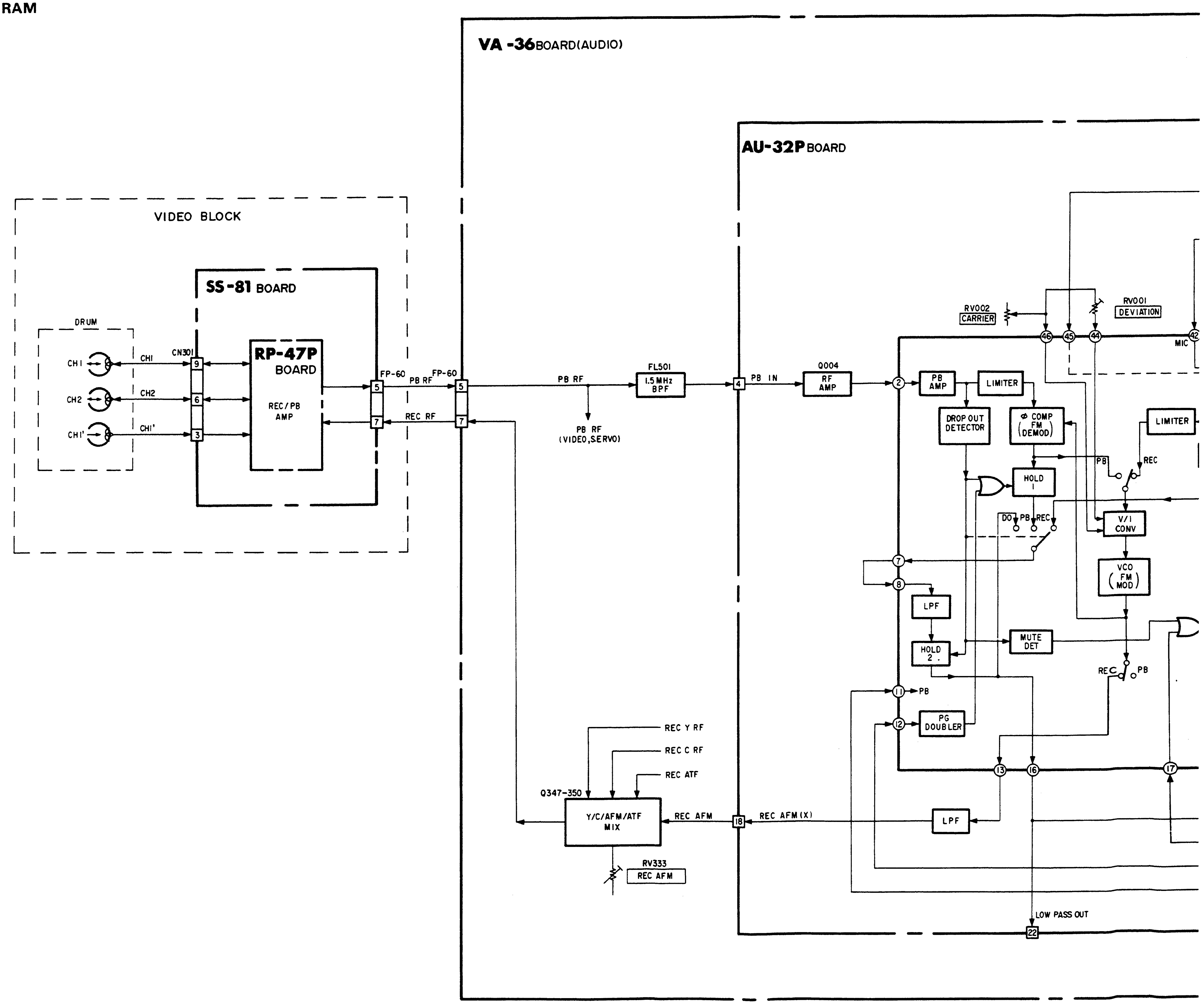
Mechanism position	READY	REC/PB/ CUE/REV/FF/REW	GL	STOP	EJECT	Mid-position
M SW1	L	H	H	H	L	H
M SW2	H	H	L	L	L	H
M SW3	H	L	L	H	H	H

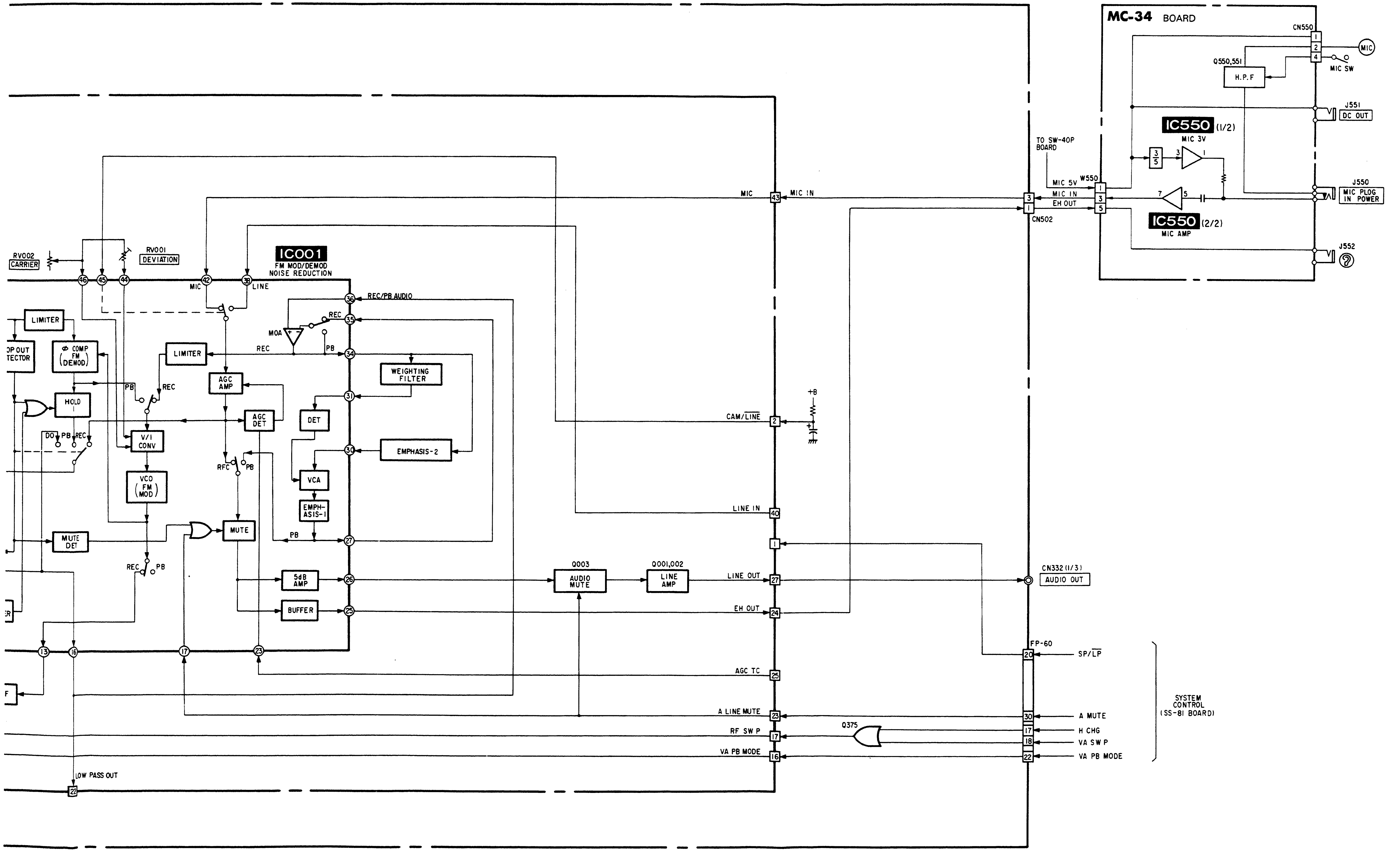
3-12. AUDIO BLOCK DIAGRAM


VA-36 BOARD (AUDIO)
AU-32P BOARD
VIDEO BLOCK
SS-81 BOARD
DRUM
CH1
CH2
CH1'
CN301
RP-47P BOARD
REC/PB AMP
FP-60
PB RF
REC RF
PB RF
PB RF (VIDEO, SERVO)
FL501
1.5 MHz BPF
PB IN
Q004
RF AMP
PB AMP
LIMITER
DROP OUT DETECTOR
Φ COMP (FM DEMOD)
HOLD 1
DO
PB
REC
V/I CONV
VCO (FM MOD)
LIMITER
REC
PB
RV002 CARRIER
RV001 DEVIATION
MIC
LPF
HOLD 2
MUTE DET
REC
PB
PB
PG DOUBLER
REC Y RF
REC C RF
REC ATF
Q347-350
Y/C/AFM/ATF MIX
REC AFM
REC AFM (X)
LPF
RV333 REC AFM
LOW PASS OUT

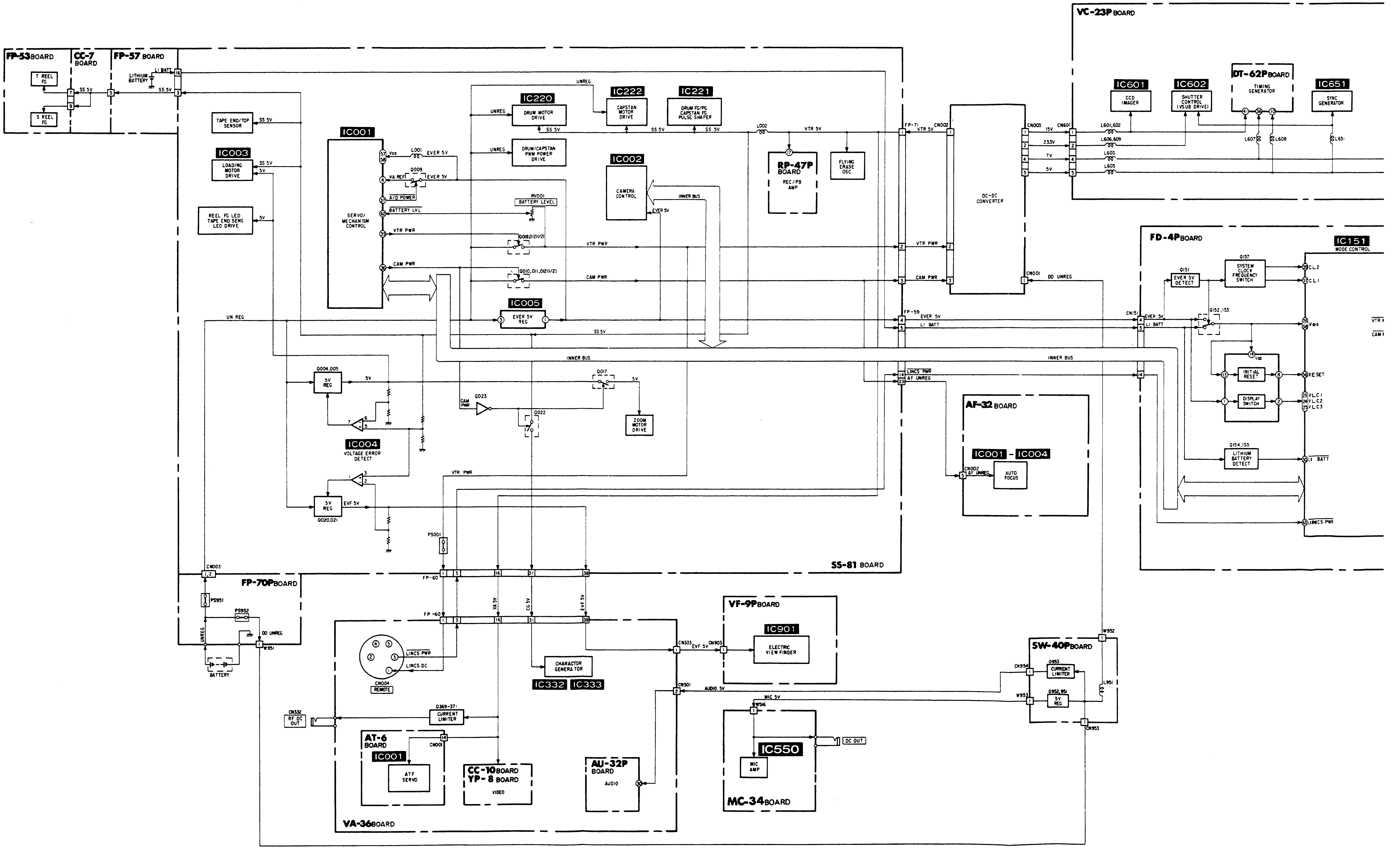

MC-34 BOARD
CN550
1
2
4
MIC
MIC SW
Q550,551
H.P.F
J551
DC OUT
IC550 (1/2)
MIC 3V
3/5
3
1
7
5
IC550 (2/2)
MIC AMP
J550
MIC PLOG IN POWER
J552
TO SW-40P BOARD
MIC 5V
MIC IN
EH OUT
W550
CN502
RV002
CARRIER
RV001
DEVIATION
IC001
FM MOD/DEMOD
NOISE REDUCTION
46
45
44
42
38
MIC
LINE
36
REC/PB AUDIO
35
REC
MOA
34
REC
PB
31
30
27
26
25
23
17
16
13
LIMITER
OP OUT
TECTOR
Φ COMP (FM DEMOD)
HOLD I
LIMITER
PB
REC
AGC AMP
AGC DET
WEIGHTING FILTER
DET
DO
PB
REC
V/I CONV
EMPHASIS-2
RFC
PB
VCA
VCO (FM MOD)
EMPH-ASIS-1
MUTE
PB
MUTE DET
REC
PB
5dB AMP
BUFFER
Q003
AUDIO MUTE
Q001,002
LINE AMP
ER
F
LOW PASS OUT
22
MIC
43
MIC IN
CAM/LINE
2
+8
LINE IN
40
1
LINE OUT
27
EH OUT
24
AGC TC
25
A LINE MUTE
23
RF SW P
17
VA PB MODE
16
Q375
CN332 (1/3)
AUDIO OUT
FP-60
20
SP/LP
30
A MUTE
17
H CHG
18
VA SW P
22
VA PB MODE
SYSTEM CONTROL (SS-81 BOARD)

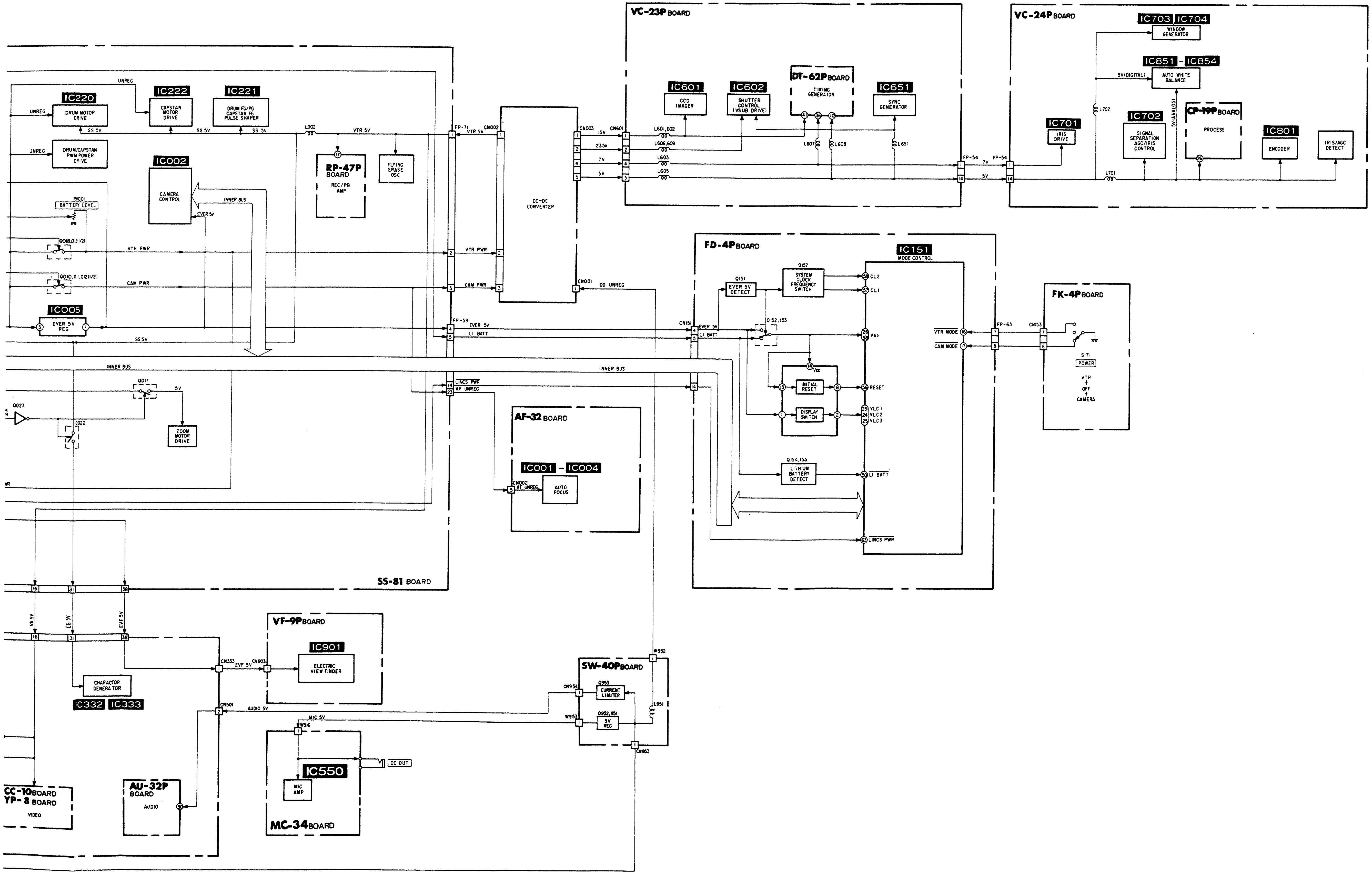
3-12. AUDIO BLOCK DIAGRAM


VA -36 BOARD (AUDIO)
AU-32P BOARD
VIDEO BLOCK
SS-81 BOARD
DRUM
CH1
CH2
CH1'
CN301
RP-47P BOARD
REC/PB AMP
FP-60
PB RF
REC RF
FL501
1.5MHz BPF
PB RF (VIDEO, SERVO)
PB IN
Q004
RF AMP
PB AMP
LIMITER
DROP OUT DETECTOR
ϕ COMP (FM DEMOD)
HOLD 1
DO
PB
REC
V/I CONV
VCO (FM MOD)
LIMITER
RV002 CARRIER
RV001 DEVIATION
MIC
LPF
HOLD 2
MUTE DET
PG DOUBLER
LPF
LOW PASS OUT
REC Y RF
REC C RF
REC ATF
Q347-350
Y/C/AFM/ATF MIX
REC AFM
REC AFM (X)
RV333 REC AFM

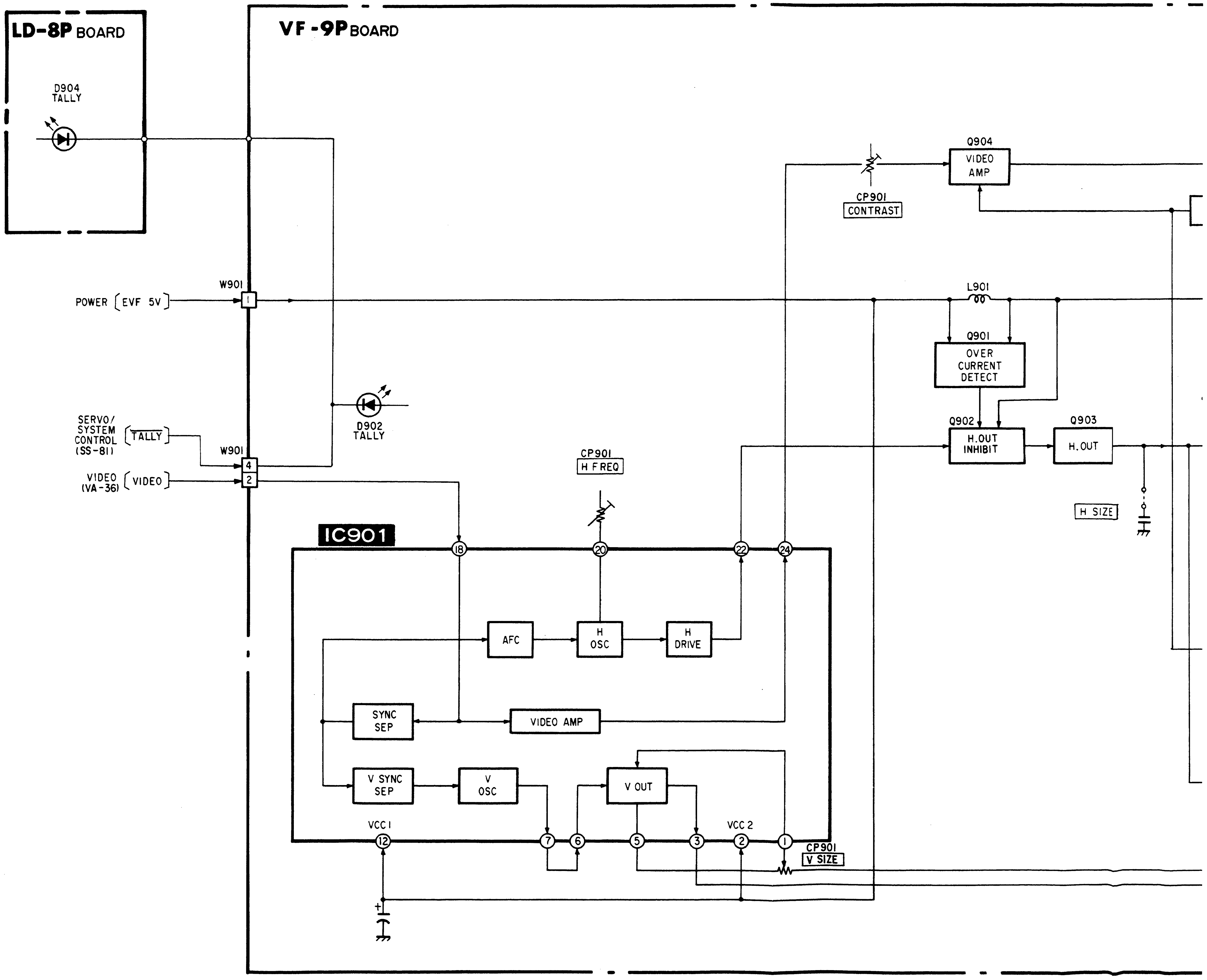

MC-34 BOARD
CN550
MIC
MIC SW
Q550,551
H.P.F
J551
DC OUT
IC550 (1/2)
MIC 3V
3/5
TO SW-40P BOARD
MIC 5V
W550
MIC IN
EH OUT
CN502
J550
MIC PLOG IN POWER
IC550 (2/2)
MIC AMP
J552
RV002
CARRIER
RV001
DEVIATION
IC001
FM MOD/DEMOD
NOISE REDUCTION
MIC
LINE
REC/PB AUDIO
REC
PB
MOA
LIMITER
OP OUT
TECTOR
Φ COMP (FM DEMOD)
HOLD
DO
PB
REC
V/I CONV
VCO (FM MOD)
AGC AMP
AGC DET
RFC
PB
MUTE
MUTE DET
WEIGHTING FILTER
DET
EMPHASIS-2
VCA
EMPH-ASIS-1
5dB AMP
BUFFER
Q003
AUDIO MUTE
Q001,002
LINE AMP
MIC
MIC IN
CAM/LINE
+B
LINE IN
LINE OUT
EH OUT
AGC TC
A LINE MUTE
RF SW P
VA PB MODE
CN332 (1/3)
AUDIO OUT
FP-60
SP/LP
A MUTE
H CHG
VA SW P
VA PB MODE
Q375
SYSTEM CONTROL (SS-81 BOARD)
LOW PASS OUT

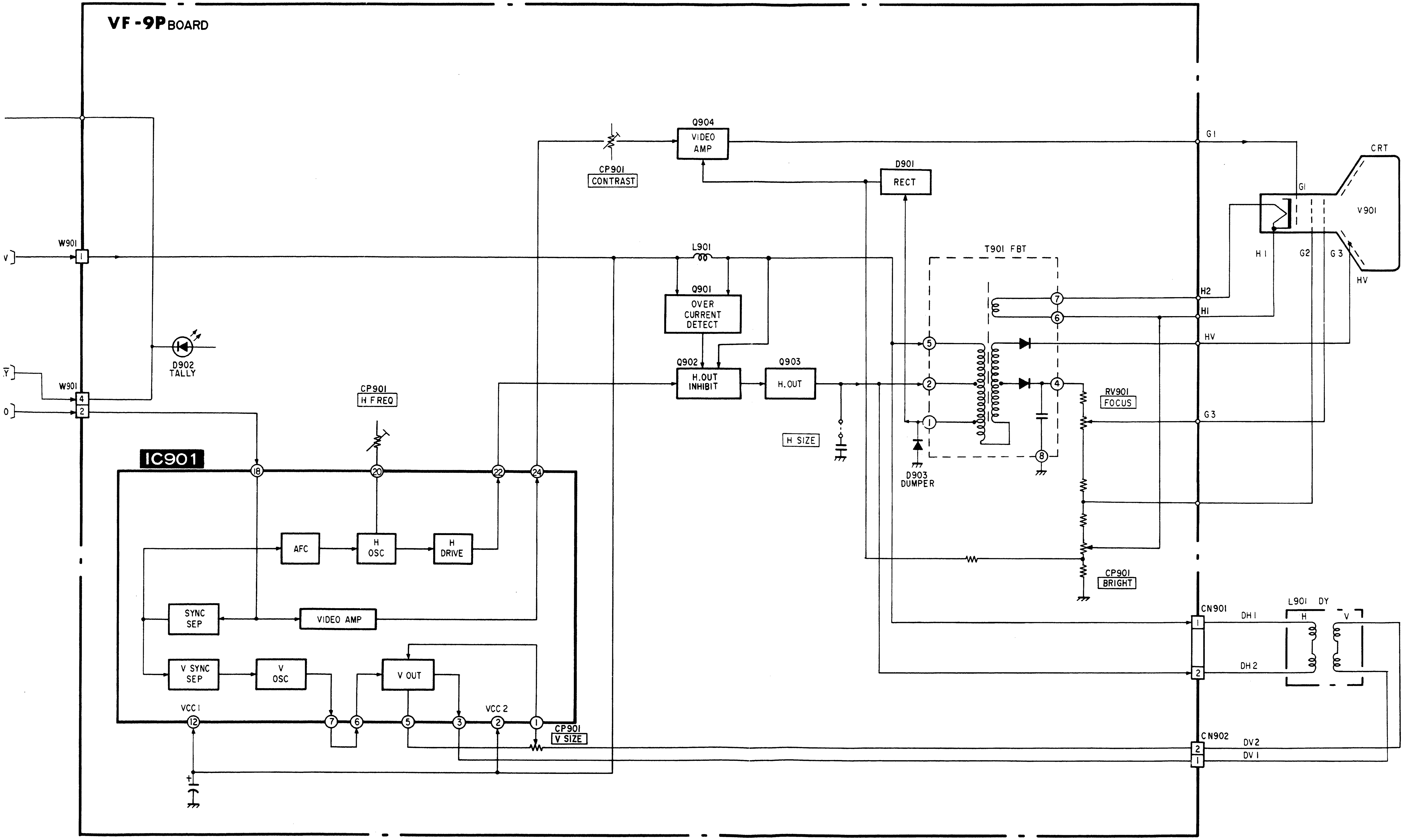
3-13. POWER BLOCK DIAGRAM


FP-53 BOARD
T REEL FG
S REEL FG
CC-7 BOARD
SS 5V
FP-57 BOARD
LITHIUM BATTERY
LI BATT
SS 5V
TAPE END/TOP SENSOR
IC003
LOADING MOTOR DRIVE
SS 5V
5V
REEL FG LED TAPE END SENS LED DRIVE
IC001
SERVO/ MECHANISM CONTROL
VDD
L001
EVER 5V
Q009
VA REF
A/D POWER
BATTERY LVL
VTR PWR
CAM PWR
UNREG
IC220
DRUM MOTOR DRIVE
DRUM/CAPSTAN PWM POWER DRIVE
IC222
CAPSTAN MOTOR DRIVE
IC221
DRUM FG/PG CAPSTAN FG PULSE SHAPER
SS 5V
IC002
CAMERA CONTROL
INNER BUS
EVER 5V
RV001
BATTERY LEVEL
Q018,012(1/2)
Q010,011,012(1/2)
IC005
EVER 5V REG
UN REG
L002
VTR 5V
RP-47P BOARD
REC/PB AMP
FLYING ERASE OSC
FP-71
CN002
DC-DC CONVERTER
CN003
CN601
15V
23.5V
7V
5V
CN001
DD UNREG
FP-59
LI BATT
LINCS PWR
AF UNREG
Q004,005
5V REG
IC004
VOLTAGE ERROR DETECT
Q020,021
EVF 5V
Q017
Q023
Q022
ZOOM MOTOR DRIVE
PS001
CN003
FP-70P BOARD
PS951
PS952
UNREG
DD UNREG
W951
BATTERY
FP-60
VA 5V
CG 5V
EVF 5V
CN004
REMOTE
LINCS DC
CHARACTOR GENERA TOR
IC332
IC333
CN332
RF DC OUT
Q369-371
CURRENT LIMITER
AT-6 BOARD
CN001
ATF SERVO
CC-10 BOARD
YP-8 BOARD
VIDEO
AU-32P BOARD
AUDIO
VA-36 BOARD
SS-81 BOARD
AF-32 BOARD
IC001 - IC004
AUTO FOCUS
VF-9P BOARD
IC901
ELECTRIC VIEW FINDER
CN333
CN903
CN501
AUDIO 5V
MIC 5V
W516
IC550
MIC AMP
DC OUT
MC-34 BOARD
SW-40P BOARD
W952
CN954
Q953
W953
Q952,951
L951
CN953
VC-23P BOARD
IC601
CCD IMAGER
IC602
SHUTTER CONTROL (VSUB DRIVE)
DT-62P BOARD
TIMING GENERATOR
IC651
SYNC GENERATOR
L601,602
L606,609
L603
L605
L607
L608
L651
FD-4P BOARD
IC151
MODE CONTROL
Q151
EVER 5V DETECT
Q157
SYSTEM CLOCK FREQUENCY SWITCH
CL2
CL1
CN151
Q152,153
VDD
INITIAL RESET
DISPLAY SWITCH
RESET
VLC1
VLC2
VLC3
Q154,155
LITHIUM BATTERY DETECT
LI BATT
LINCS PWR


VC-23P BOARD
IC601
CCD IMAGER
IC602
SHUTTER CONTROL (VSUB DRIVE)
DT-62P BOARD
TIMING GENERATOR
IC651
SYNC GENERATOR
CN601
15V
23.5V
7V
5V
L601,602
L606,609
L603
L605
L607
L608
L631
FP-54
VC-24P BOARD
IC703 IC704
WINDOW GENERATOR
IC851 - IC854
AUTO WHITE BALANCE
5V(DIGITAL)
5V(ANALOG)
L702
L701
IC701
IRIS DRIVE
IC702
SIGNAL SEPARATION AGC/IRIS CONTROL
CP-19P BOARD
PROCESS
IC801
ENCODER
IRIS/AGC DETECT
UNREG
IC220
DRUM MOTOR DRIVE
IC222
CAPSTAN MOTOR DRIVE
IC221
DRUM FG/PG CAPSTAN FG PULSE SHAPER
SS 5V
DRUM/CAPSTAN PWM POWER DRIVE
L002
VTR 5V
RP-47P BOARD
REC/PB AMP
FLYING ERASE OSC
IC002
CAMERA CONTROL
INNER BUS
EVER 5V
RV001
BATTERY LEVEL
Q018,012(1/2)
VTR PWR
Q010,011,012(1/2)
CAM PWR
IC005
EVER 5V REG
SS 5V
FP-71
CN002
CN003
DC-DC CONVERTER
CN001
DD UNREG
FP-59
LI BATT
LINCS PWR
AF UNREG
Q017
5V
Q023
Q022
ZOOM MOTOR DRIVE
AF-32 BOARD
IC001 - IC004
CN002
AUTO FOCUS
SS-81 BOARD
VA 5V
CG 5V
EVF 5V
CHARACTOR GENERATOR
IC332 IC333
CN333
CN903
VF-9P BOARD
IC901
ELECTRIC VIEW FINDER
CN501
AUDIO 5V
MIC 5V
W516
MC-34 BOARD
IC550
MIC AMP
DC OUT
SW-40P BOARD
W952
CN954
Q953
CURRENT LIMITER
W953
Q952,951
5V REG
L951
CN953
CC-10 BOARD
YP-8 BOARD
VIDEO
AU-32P BOARD
AUDIO
FD-4P BOARD
IC151
MODE CONTROL
CN151
Q151
EVER 5V DETECT
Q157
SYSTEM CLOCK FREQUENCY SWITCH
CL2
CL1
Q152,153
VDD
INITIAL RESET
DISPLAY SWITCH
RESET
VLC1
VLC2
VLC3
Q154,155
LITHIUM BATTERY DETECT
LI BATT
LINCS PWR
VTR MODE
CAM MODE
FP-63
CN153
FK-4P BOARD
S171
POWER
VTR
OFF
CAMERA

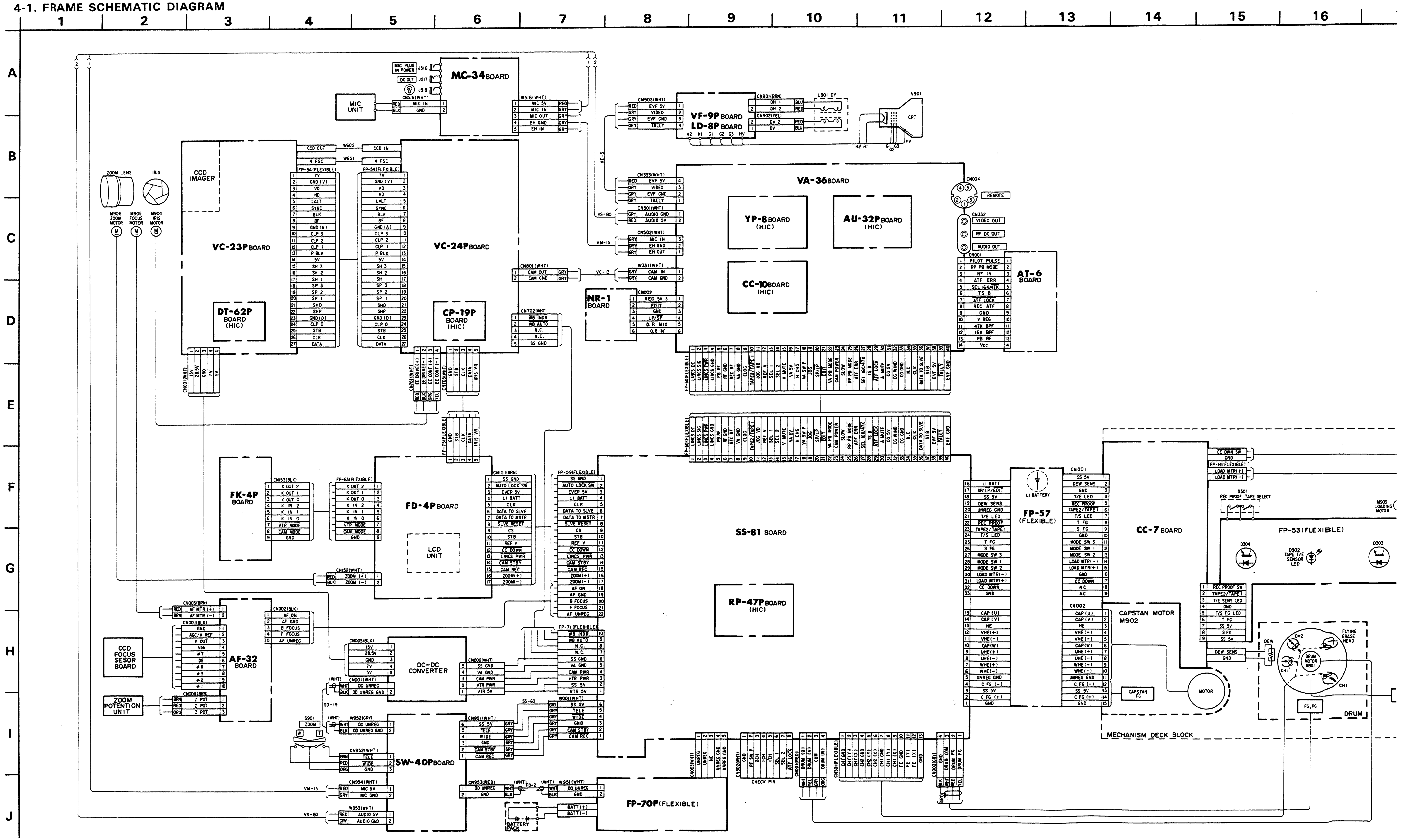
3-14. VIEWFINDER BLOCK DIAGRAM

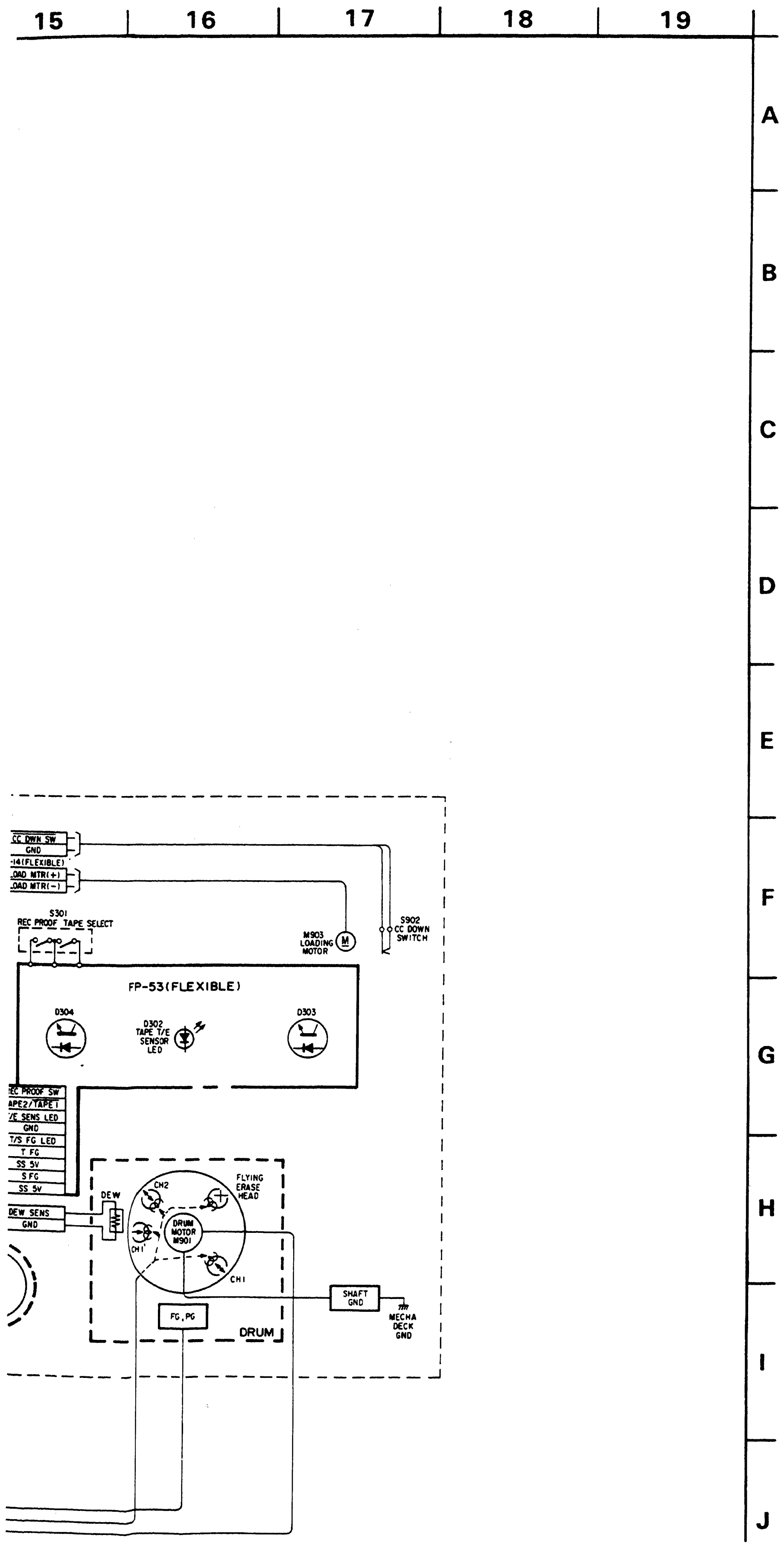

LD-8P BOARD
D904
TALLY
VF-9P BOARD
POWER
EVF 5V
W901
1
SERVO/
SYSTEM
CONTROL
(SS-81)
TALLY
W901
4
2
VIDEO
(VA-36)
VIDEO
D902
TALLY
CP901
H FREQ
CP901
CONTRAST
Q904
VIDEO
AMP
L901
Q901
OVER
CURRENT
DETECT
Q902
H.OUT
INHIBIT
Q903
H.OUT
H SIZE
IC901
18
20
22
24
AFC
H
OSC
H
DRIVE
SYNC
SEP
VIDEO AMP
V SYNC
SEP
V
OSC
V OUT
VCC 1
12
7
6
5
3
VCC 2
2
1
CP901
V SIZE


VF-9P BOARD
W901
1
W901
4
2
D902
TALLY
IC901
18
20
22
24
CP901
H FREQ
AFC
H
OSC
H
DRIVE
SYNC
SEP
VIDEO AMP
V SYNC
SEP
V
OSC
V OUT
VCC 1
12
7
6
5
3
VCC 2
2
1
CP901
V SIZE
Q904
VIDEO
AMP
CP901
CONTRAST
D901
RECT
L901
Q901
OVER
CURRENT
DETECT
Q902
H.OUT
INHIBIT
Q903
H.OUT
H SIZE
D903
DUMPER
T901 FBT
7
6
5
2
1
4
8
RV901
FOCUS
CP901
BRIGHT
G1
H2
H1
HV
G3
CRT
G1
V901
H1
G2
G3
HV
CN901
DH1
DH2
1
2
L901 DY
H
V
CN902
DV2
DV1
2
1

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. FRAME SCHEMATIC DIAGRAM


MC-34 BOARD
MIC UNIT
MIC PLUG IN POWER
DC OUT
VF-9P BOARD
LD-8P BOARD
CRT
V901
L901 DY
CCD IMAGER
ZOOM LENS
IRIS
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS MOTOR
VC-23P BOARD
VC-24P BOARD
DT-62P BOARD (HIC)
CP-19P BOARD (HIC)
VA-36 BOARD
YP-8 BOARD (HIC)
AU-32P BOARD (HIC)
CC-10 BOARD (HIC)
NR-1 BOARD
AT-6 BOARD
REMOTE
VIDEO OUT
RF DC OUT
AUDIO OUT
FK-4P BOARD
FD-4P BOARD
LCD UNIT
SS-81 BOARD
RP-47P BOARD (HIC)
FP-57 (FLEXIBLE)
LI BATTERY
CC-7 BOARD
FP-53 (FLEXIBLE)
M903 LOADING MOTOR
S301 REC PROOF TAPE SELECT
D304
D302 TAPE T/E SENSOR LED
D303
CAPSTAN MOTOR M902
CAPSTAN FG
MOTOR
DEW
FLYING ERASE HEAD
DRUM MOTOR M901
CH1
CH2
FG, PG
DRUM
MECHANISM DECK BLOCK
CCD FOCUS SESOR BOARD
AF-32 BOARD
ZOOM POTENTION UNIT
DC-DC CONVERTER
S901 ZOOM
SW-40P BOARD
FP-70P (FLEXIBLE)
BATTERY PACK
CHECK PIN
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J


15
16
17
18
19
A
B
C
D
E
F
G
H
I
J
CC DWN SW
GND
-14(FLEXIBLE)
LOAD MTR(+)
LOAD MTR(−)
S301
REC PROOF TAPE SELECT
M903
LOADING
MOTOR
S902
CC DOWN
SWITCH
FP-53(FLEXIBLE)
D304
D302
TAPE T/E
SENSOR
LED
D303
REC PROOF SW
TAPE2/TAPE1
T/E SENS LED
GND
T/S FG LED
T FG
SS 5V
S FG
SS 5V
DEW SENS
GND
DEW
CH2
FLYING
ERASE
HEAD
DRUM
MOTOR
M901
CH1'
CH1
SHAFT
GND
MECHA
DECK
GND
FG, PG
DRUM

FRAME FRAME

PRECAUTION FOR REPLACEMENT OF CCD IMAGER BLOCK

- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

Note:

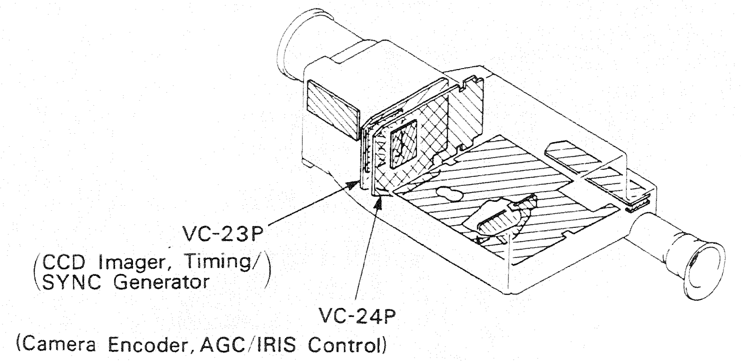
- ⊗ : Through hole.
- ░ : Pattern from the side which enables seeing.
- ▒ : Pattern of the rear side.
- Digital transistor (VC-24P board: Q851, Q852, Q853, Q854, Q857, Q858, Q859, Q862): transistor with resistor.
  Refer to the VC-24P board schematic diagram for digital transistor.

Caution:

Pattern face side: (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

When indicating parts by reference number, please include the board name.

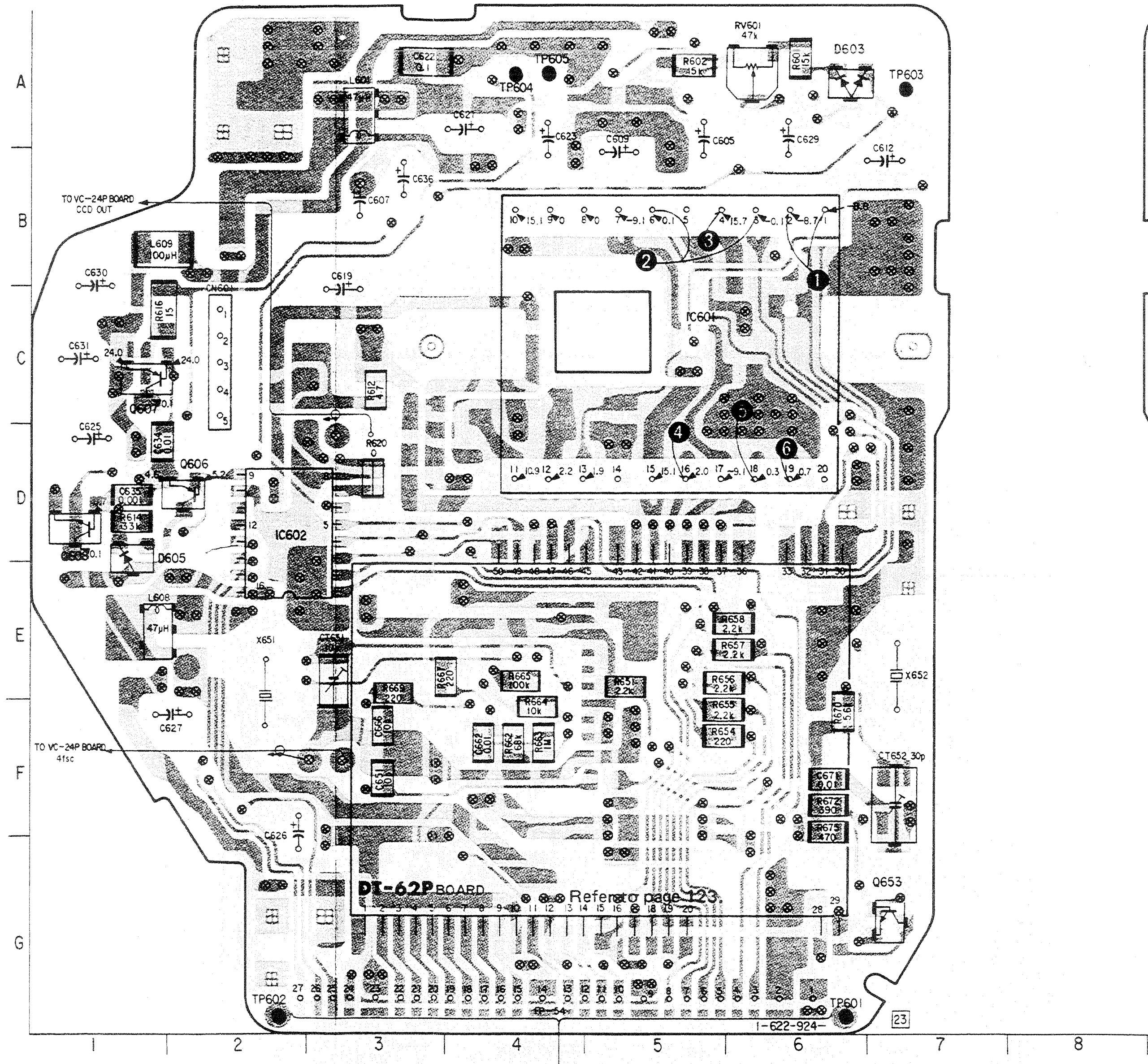
CN601	C-2
CT651	E-3
CT652	F-7
D602	C-10
D603	A-6
D604	C-14
D651	D-1
FP-54	G-4
IC601	C-5
IC602	D-2
IC651	E-11
Q601	A-9
Q602	A-10
Q603	A-10
Q604	A-12
Q605	D-14
Q606	D-2
Q607	C-1
Q608	D-1
Q651	F-12
Q652	F-9
Q653	G-7
RV601	A-6
TP601	G-6
TP602	G-2
TP603	A-7
TP604	A-3
TP605	A-3


VC-23P
(CCD Imager, Timing/SYNC Generator)
VC-24P
(Camera Encoder, AGC/IRIS Control)

VC-23P(CCD IMAGER, TIMING/SYNC GENERATOR), VC-24P(CAMERA ENCODER, AGC/IRIS CONTROL) PRINTED WIRING BOARDS

—Ref. No. VC-23P and VC-24P BOARDS : 1, 000 series—

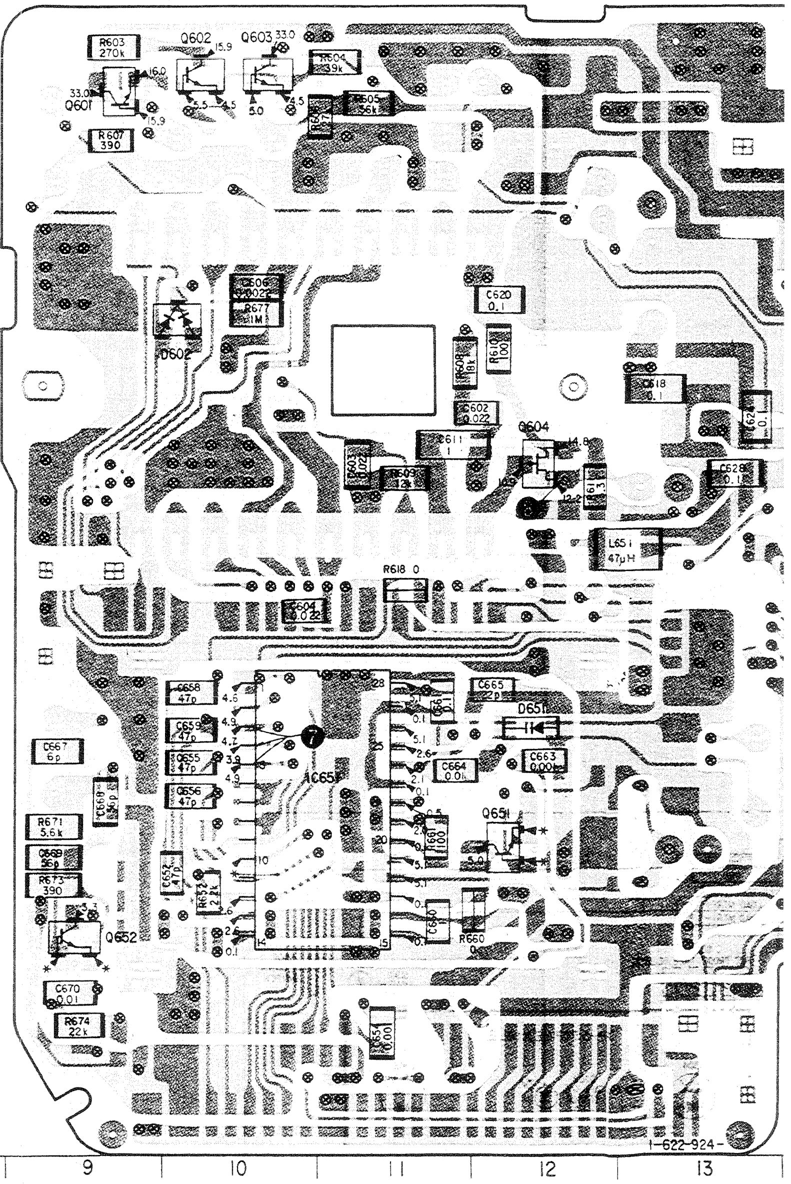
VC-23P BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
TP605
TP604
RV601 47k
D603
TP603
R602
C622
C621
C623
C609
C605
C629
C612
C636
C607
TO VC-24P BOARD CCD OUT
L609 100μH
C630
C619
CN601
R616
C631
Q607
Q608
IC601
R620
C625
Q606
C632
R614
D605
IC602
L608 47μH
X651
C627
TO VC-24P BOARD 4fsc
R663 100k
R664 10k
R658 2.2k
R657 2.2k
R656 2.2M
R655 2.2k
R654 220
R670 56k
X652
CT652 30p
C671
R672
R675 470
Q653
C626
DT-62P BOARD
Refer to page 123.
FP-54
TP602
TP601
1-622-924-
23

TO VC-24P BOARD FP-54

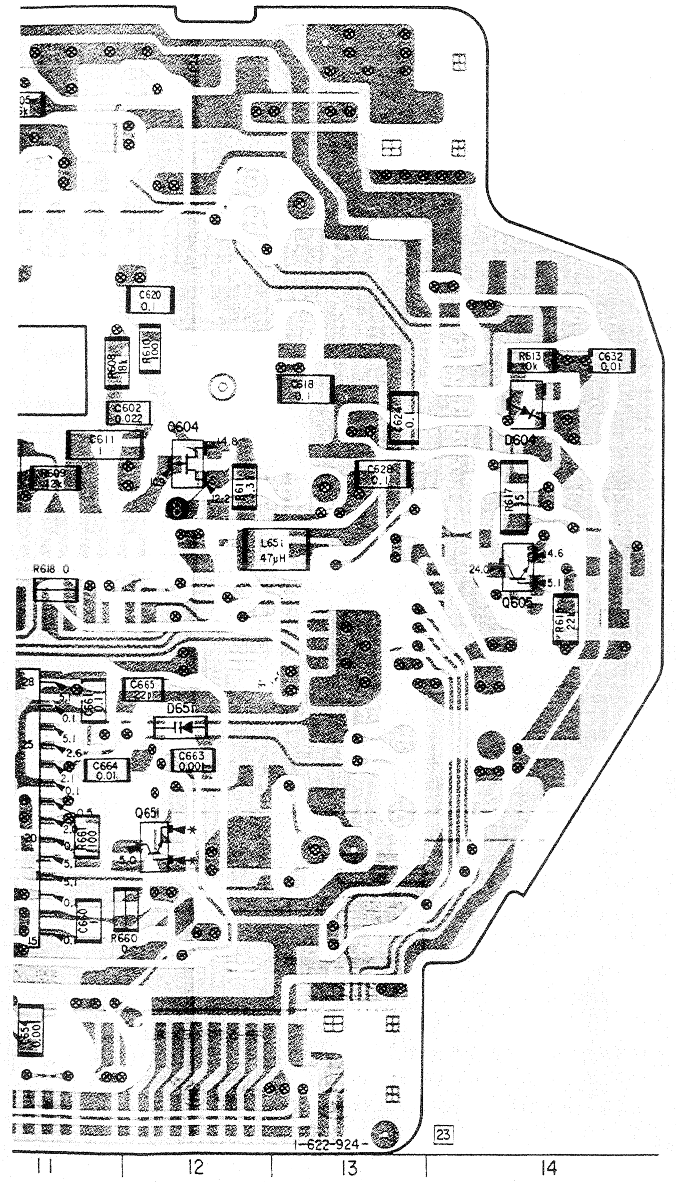
no mark : REC mode

VC-23P BOARD (SOLDER SIDE)


9
10
11
12
13
R603 270k
Q602
Q603
Q601
R607 390
R604 39k
R605 56k
C606
R677 1M
D602
C620 0.1
C618 0.1
C602 0.022
R611
Q604
L651 47μH
R618 0
C604 0.022
C658 47p
C659 47p
C655 47p
C656 47p
C667 6p
R671 5.6k
C669 56p
R673 390
Q652
C670 0.01
R674 22k
IC651
C665
D651
C664 0.01
C663 0.001
Q651
R660
1-622-924-

no mark : REC
Marked * is n
the voltage of it

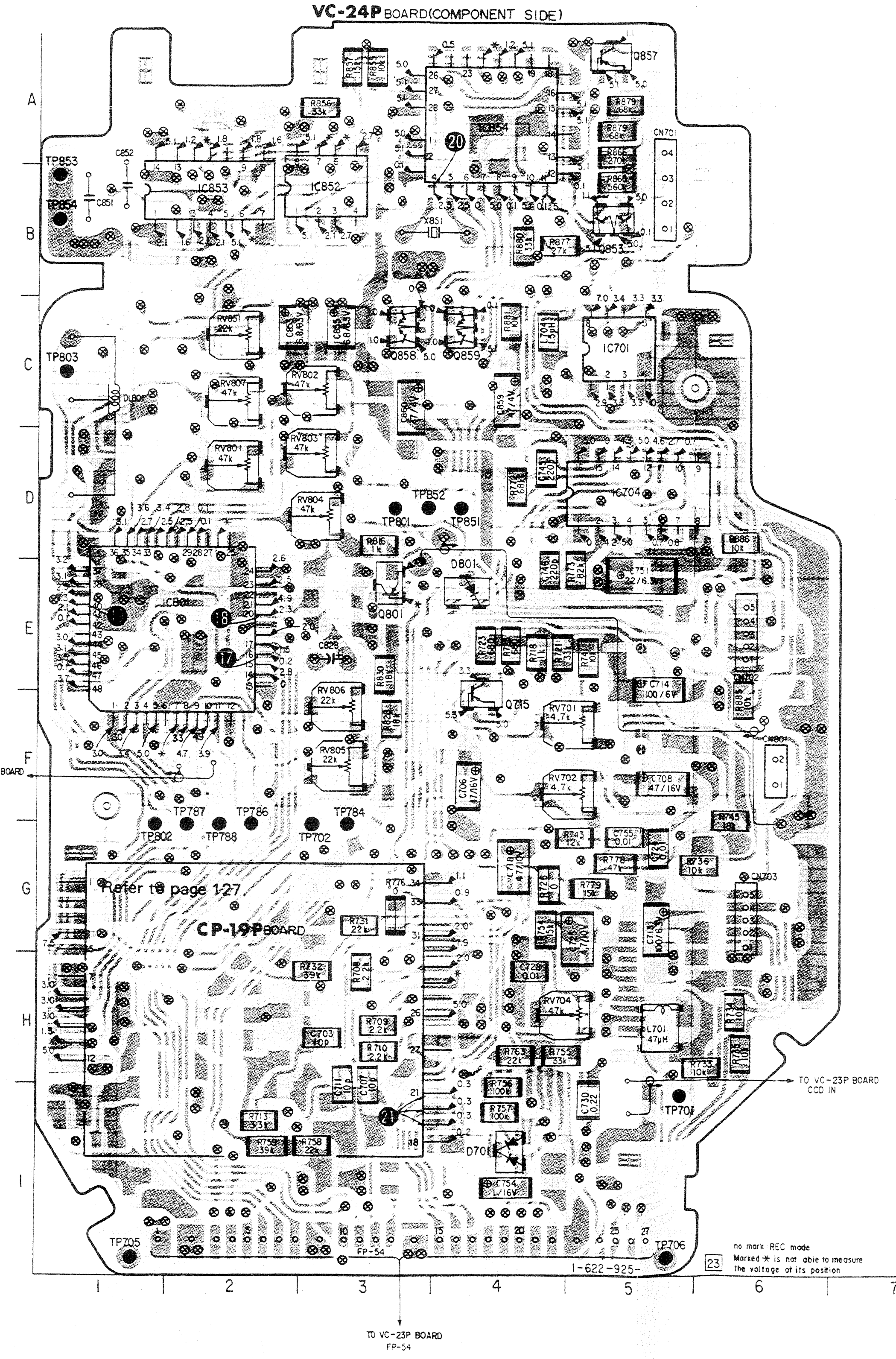
CAMERA(1)　CAMERA(1)


1-622-924-
23
11
12
13
14

no mark : REC mode
Marked ✻ is not able to measure the voltage of its position.

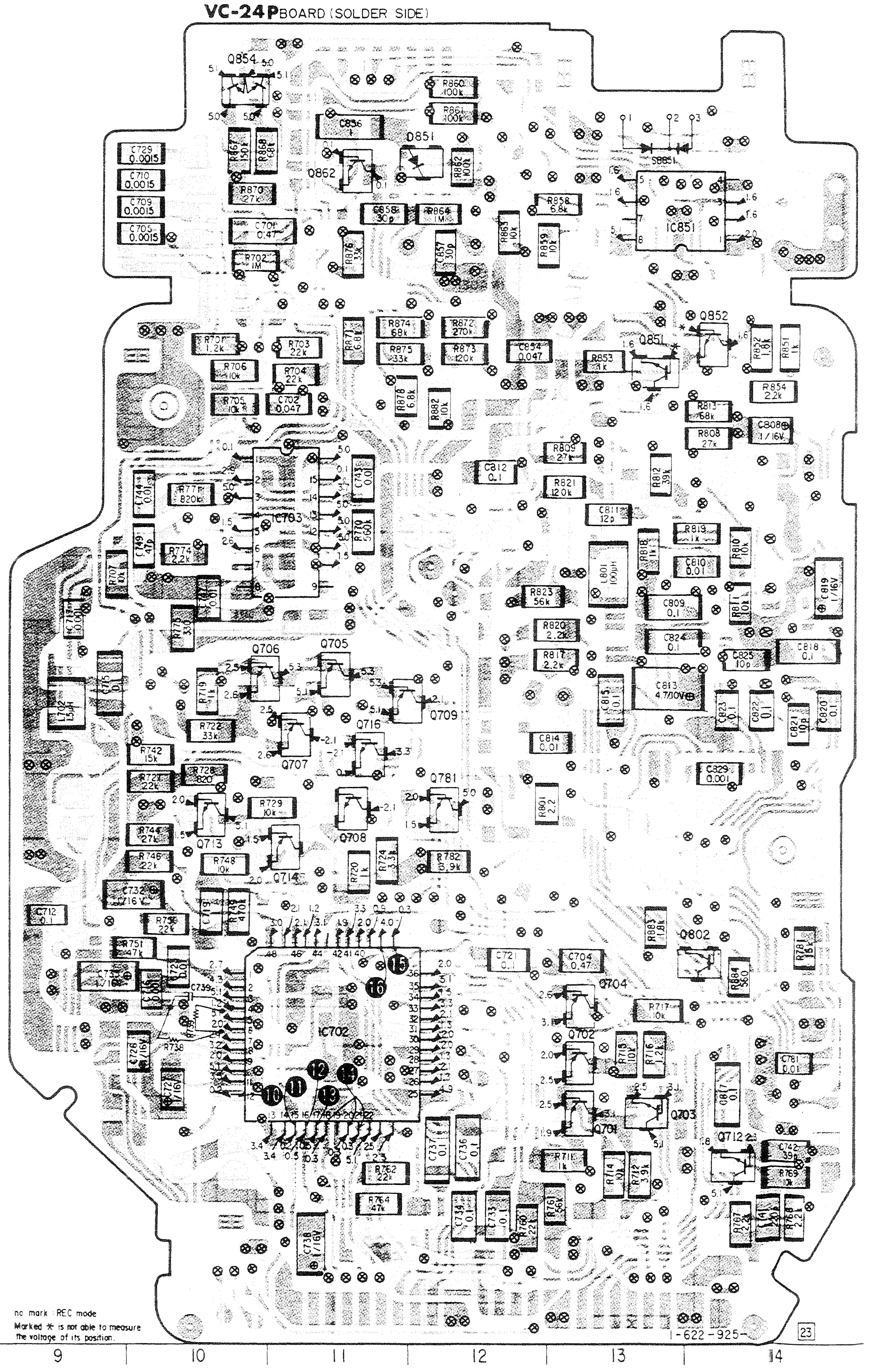
CN701	A-5
CN702	E-6
CN703	G-6
CN801	F-6
D701	I-4
D801	E-4
D851	A-12
FP-54	I-3
IC701	C-5
IC702	H-11
IC703	D-11
IC704	D-5
IC801	E-2
IC851	B-13
IC852	B-2
IC853	B-2
IC854	A-4
Q701	H-13
Q702	H-13
Q703	H-13
Q704	H-13
Q705	E-11
Q706	E-10
Q707	F-11
Q708	F-11
Q709	E-11
Q712	I-14
Q713	F-10
Q714	F-11
Q715	E-4
Q716	F-11
Q781	F-12
Q801	E-3
Q802	G-14
Q851	C-13
Q852	C-14
Q853	B-5
Q854	A-10
Q857	A-5
Q858	C-3
Q859	C-4
Q862	B-11
RV701	F-4
RV702	F-4
RV704	H-4
RV801	D-2
RV802	C-3
RV803	D-3
RV804	D-3
RV805	F-3
RV806	F-3
RV807	C-2
RV851	C-2
SB851	A-13
TP701	I-5
TP702	G-3
TP705	I-1
TP706	I-5
TP784	G-3
TP786	G-2
TP787	G-2
TP788	G-2
TP801	D-3
TP802	G-1
TP803	C-1
TP851	D-4
TP852	D-3
TP853	B-1
TP854	B-1

VC-24P BOARD (COMPONENT SIDE)


TO VC-23P BOARD
4fsc
Refer to page 127
CP-19P BOARD
TO VC-23P BOARD
CCD IN
TO VC-23P BOARD
FP-54
1-622-925-
23
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8

no mark : REC mode
Marked ✻ is not able to measure the voltage of its position.

VC-24P BOARD (SOLDER SIDE)


1-622-925-
23
9
10
11
12
13
14

no mark : REC mode
Marked ✻ is not able to measure the voltage of its position.

VC-23P(CCD IMAGER, TIMING/SYNC GENERATOR), VC-24P(CAMERA ENCODER, AGC/IRIS CONTROL) SCHEMATIC DIAGRAM

—Ref. No. VC-23P and VC-24P BOARDS : 1,000 series—

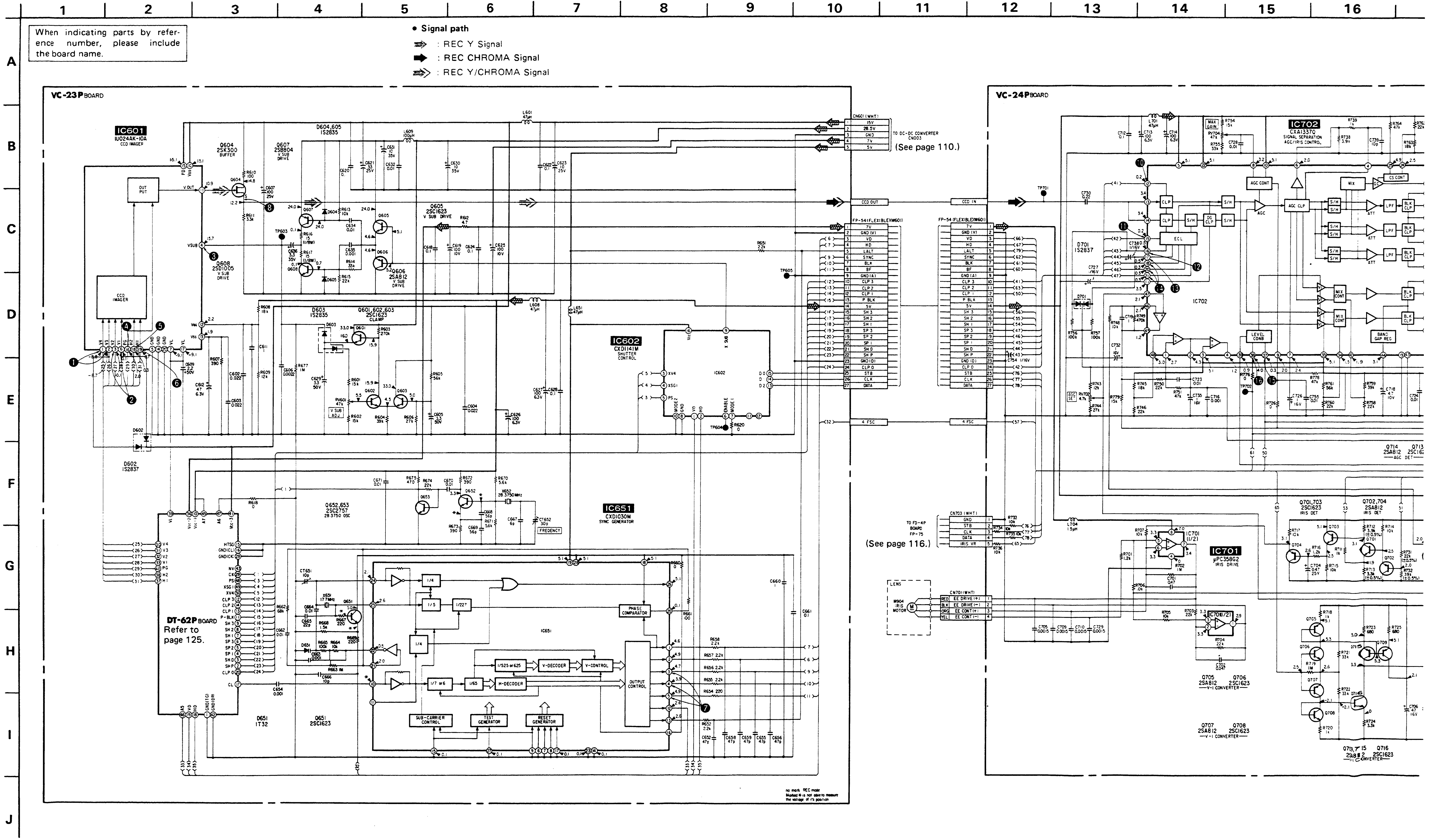
When indicating parts by reference number, please include the board name.

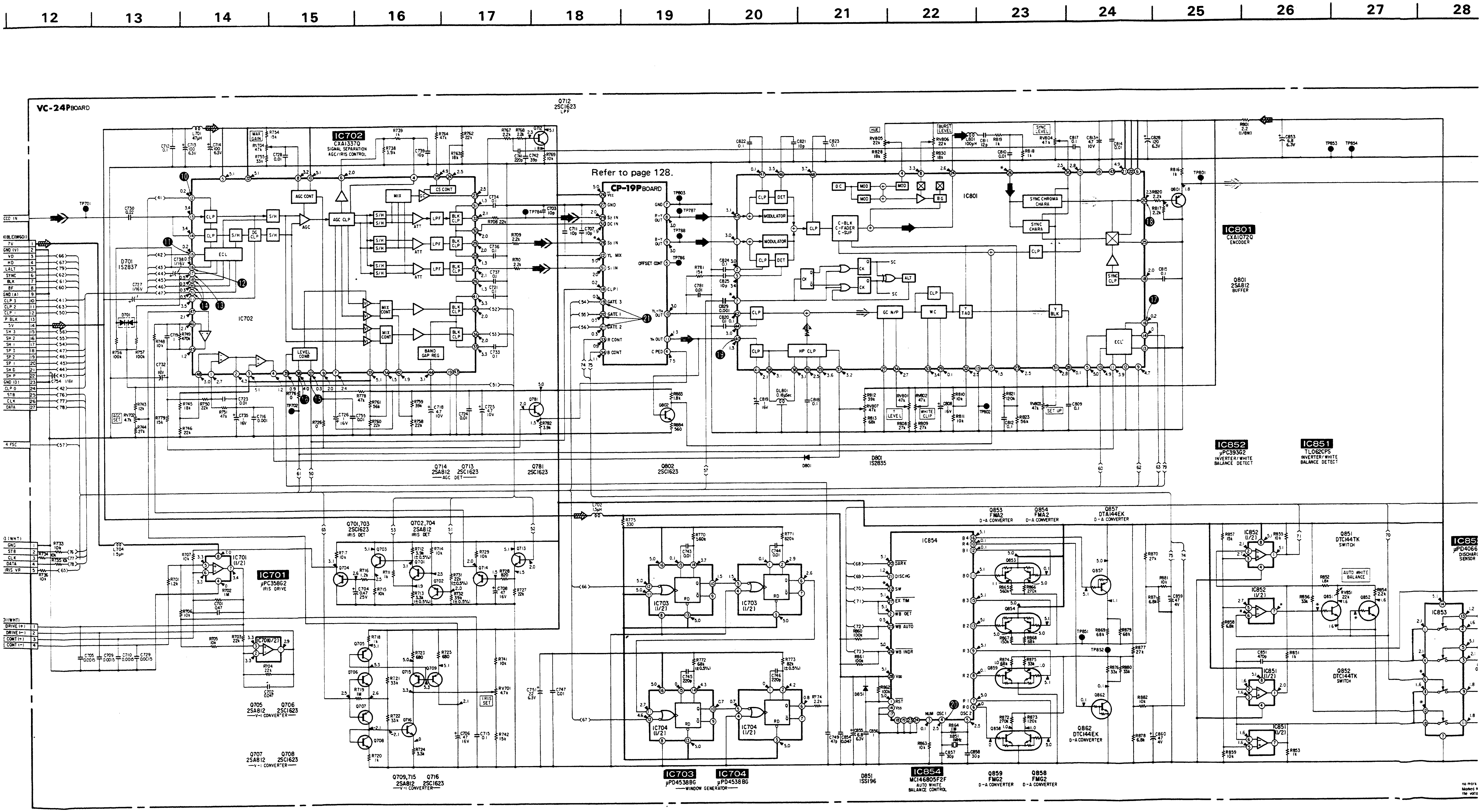
- Signal path

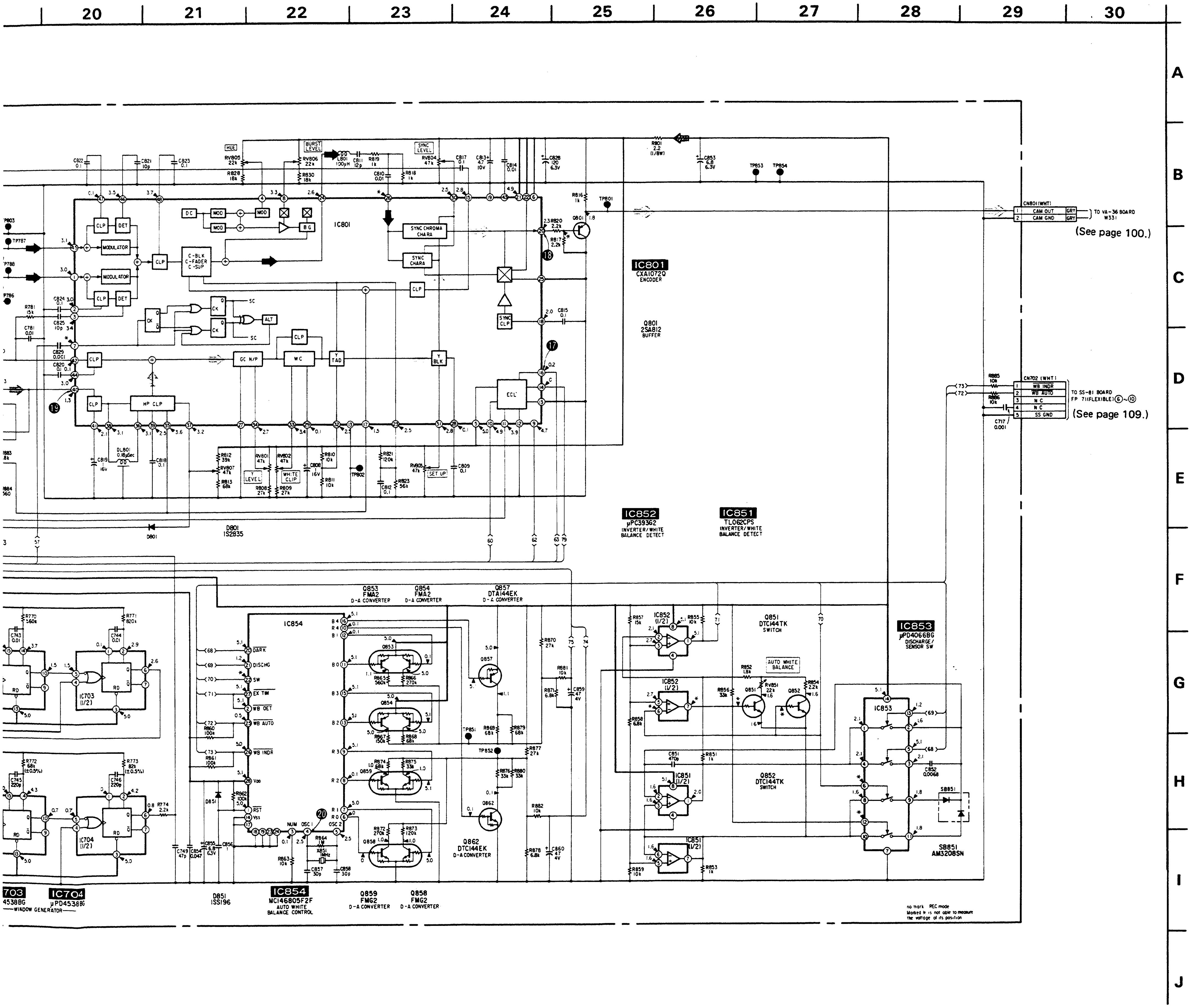
⇛ : REC Y Signal

➡ : REC CHROMA Signal

⇛ : REC Y/CHROMA Signal


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
VC-23P BOARD
IC601
IU024AK-10A
CCD IMAGER
OUT PUT
CCD IMAGER
Q604
2SK300
BUFFER
Q607
2SB804
V SUB DRIVE
D604,605
1S2835
Q605
2SC1623
V SUB DRIVE
Q606
2SA812
V SUB DRIVE
Q608
2SD1005
V SUB DRIVE
D603
1S2835
Q601,602,603
2SC1623
CLAMP
D602
1S2837
IC602
CXD1141M
SHUTTER CONTROL
Q652,653
2SC2757
28.3750 OSC
X652
28.3750MHz
FREQENCY
IC651
CXD1030M
SYNC GENERATOR
DT-62P BOARD
Refer to page 125.
1/4
1/5
1/227
1/4
1/7 or 6
1/65
1/525 or 625
V-DECODER
V-CONTROL
H-DECODER
PHASE COMPARATOR
OUTPUT CONTROL
SUB-CARRIER CONTROL
TEST GENERATOR
RESET GENERATOR
D651
1T32
Q651
2SC1623
CN601 (WHT)
15V
28.5V
GND
7V
5V
TO DC-DC CONVERTER CN003
(See page 110.)
CCD OUT
CCD IN
FP-54 (FLEXIBLE) (W601)
4 FSC
CN703 (WHT)
GND
STB
CLK
DATA
IRIS VR
TO FD-4P BOARD FP-75
(See page 116.)
LENS
M904
IRIS MOTOR
CN701 (WHT)
EE DRIVE (+)
EE DRIVE (−)
EE CONT (+)
EE CONT (−)
VC-24P BOARD
IC702
CXA1337Q
SIGNAL SEPARATION AGC/IRIS CONTROL
CLP
S/H
AGC CONT
AGC
AGC CLP
MIX
CS CONT
LPF
BLK CLP
ATT
ECL
MIX CONT
LEVEL COMB
BAND GAP REG
D701
1S2837
IC701
(1/2)
IC701
µPC358G2
IRIS DRIVE
Q701,703
2SC1623
IRIS DET
Q702,704
2SA812
IRIS DET
Q705
2SA812
Q706
2SC1623
V-I CONVERTER
Q707
2SA812
Q708
2SC1623
V-I CONVERTER
Q714
2SA812
AGC DET
Q716
2SC1623
no mark: REC mode

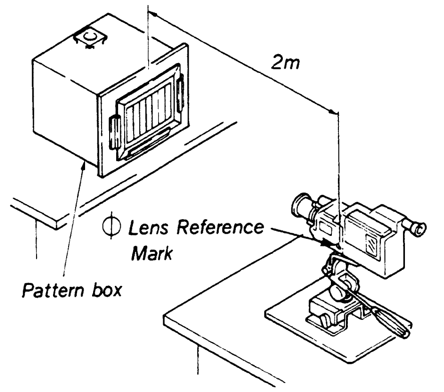

12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
VC-24P BOARD
Refer to page 128.
CP-19P BOARD
IC702
CXA1337Q
SIGNAL SEPARATION
AGC/IRIS CONTROL
IC801
CXA1072Q
ENCODER
Q801
2SA812
BUFFER
IC852
μPC393G2
INVERTER/WHITE BALANCE DETECT
IC851
TL062CPS
INVERTER/WHITE BALANCE DETECT
Q712
2SC1623
LPF
Q714 2SA812
Q713 2SC1623
AGC DET
Q781
2SC1623
Q802
2SC1623
D801
1S2835
IC701
μPC3586Z
IRIS DRIVE
Q701,703
2SC1623
IRIS DET
Q702,704
2SA812
IRIS DET
Q705 2SA812
Q706 2SC1623
V-I CONVERTER
Q707 2SA812
Q708 2SC1623
V-I CONVERTER
Q709,715 2SA812
Q716 2SC1623
V-I CONVERTER
IC703
μPD4538BG
IC704
μPD4538BG
WINDOW GENERATOR
D851
1SS196
IC854
MC146805F2F
AUTO WHITE BALANCE CONTROL
Q853 FMA2 D-A CONVERTER
Q854 FMA2 D-A CONVERTER
Q857 DTA144EK D-A CONVERTER
Q859 FMG2 D-A CONVERTER
Q858 FMG2 D-A CONVERTER
Q862 DTC144EK D-A CONVERTER
Q851 DTC144TK SWITCH
Q852 DTC144TK SWITCH
IC853
μPD4066
DISCHARGE SENSOR
AGC CONT
AGC CLP
CS CONT
MIX
S/H
LPF
BLK CLP
ATT
CLP
DC CLP
ECL
MIX CONT
LEVEL COMB
BAND GAP REG
MAX GAIN
HUE
BURST LEVEL
SYNC LEVEL
MODULATOR
DET
C-BLK C-FADER C-SJP
SYNC CHROMA CHARA
SYNC CHARA
SYNC CLP
GC N/P
WC
Y TAD
Y BLK
ECL'
HP CLP
ALT
CK
LEVEL
WHITE CLIP
SET UP
AGC SET
IRIS SET
AUTO WHITE BALANCE
CCD IN
4 FSC
DARK
DISCHG
SW
EX TIM
WB OET
WB AUTO
WB INDR
RST
NUM
OSC1
OSC2
Vss
Vdd
GATE 3
GATE 1
GATE 2
R CONT
B CONT
YL MIX
OFFSET CONT
C PED
Yh OUT
R-Y OUT
B-Y OUT
TP701
TP702
TP784
TP786
TP787
TP788
TP801
TP802
TP803
TP851
TP852
TP853
TP854
DRIVE (+)
DRIVE (-)
E CONT (+)
E CONT (-)
IRIS VR


IC801
CXA1072Q
ENCODER
Q801
2SA812
BUFFER
IC852
μPC3936Z
INVERTER/WHITE BALANCE DETECT
IC851
TL062CPS
INVERTER/WHITE BALANCE DETECT
IC853
μPD4066BG
DISCHARGE/SENSOR SW
IC854
MC146805F2F
AUTO WHITE BALANCE CONTROL
IC703
4538BG
IC704
μPD4538BG
WINDOW GENERATOR
Q853
FMA2
D-A CONVERTER
Q854
FMA2
D-A CONVERTER
Q857
DTA144EK
D-A CONVERTER
Q859
FMG2
D-A CONVERTER
Q858
FMG2
D-A CONVERTER
Q862
DTC144EK
D-A CONVERTER
Q851
DTC144TK
SWITCH
Q852
DTC144TK
SWITCH
D801
1S2835
D851
1SS196
SB851
AM3208SN
CN801 (WHT)
CAM OUT
CAM GND
TO VA-36 BOARD W331
(See page 100.)
CN702 (WHT)
WB INDR
WB AUTO
N C
N C
SS GND
TO SS-81 BOARD FP 71(FLEXIBLE)⑥-⑩
(See page 109.)
TP801
TP802
TP853
TP854
HUE
BURST LEVEL
SYNC LEVEL
Y LEVEL
WHITE CLIP
SET UP
AUTO WHITE BALANCE
20
21
22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
no mark: REC mode
Marked * is not able to measure the voltage of its position

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ⊡ : Nonflammable resistor
- —— : B+ bus.
- ▨ : IN/OUT direction of B+, B − bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box color bars.
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Φ Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

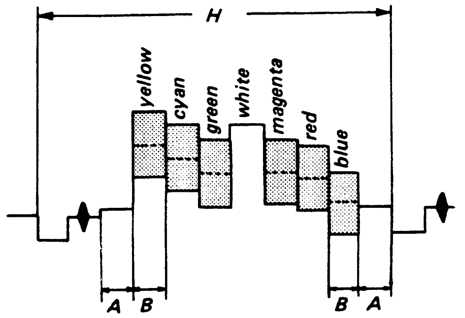

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform of TP801 on VC-24P board.

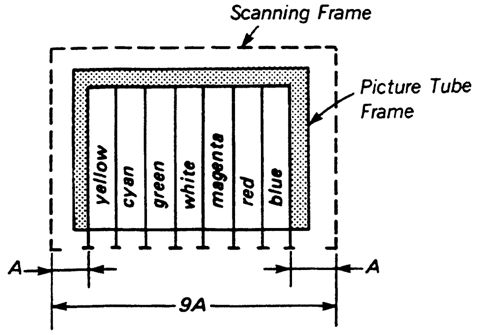
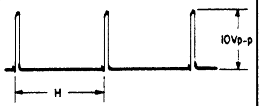
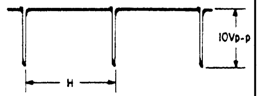

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

Fig. b Picture of TV monitor screen

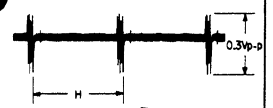
VC-23P BOARD

❶


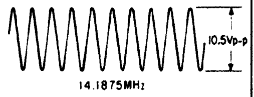
IC601 ①,②

❷


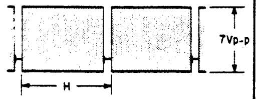
IC601 ③,⑥

❸


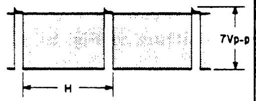
IC601 ④

❹


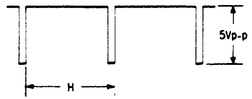
IC601 ⑯

❺


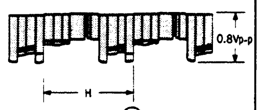
IC601 ⑱

❻


IC601 ⑲

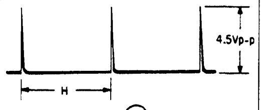
❼


IC651 ③,④,⑤

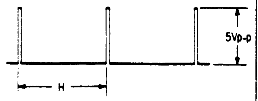
❽


Q604 Ⓢ

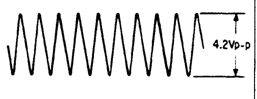
VC-24P BOARD

❿


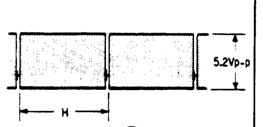
IC702 ⑫

⓫


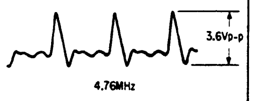
IC702 ⑮

⓬


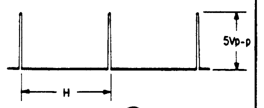
IC702 ⑯

⓭


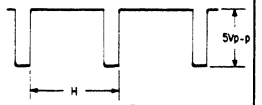
IC702 ⑰

⓮


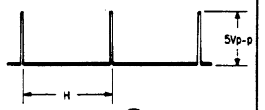
IC702 ⑱,⑳,㉑

⓯


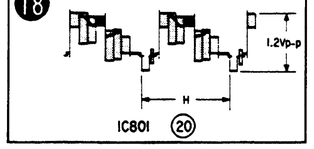
IC702 ㊲

⓰


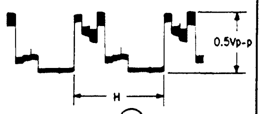
IC702 ㊳

⓱


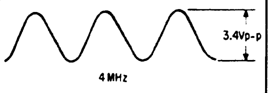
IC801 ⑯

⓲


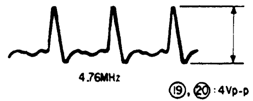
IC801 ⑳

⓳


IC801 ㊵

⓴


IC854 ④

㉑


⑲,⑳ : 4Vp-p
㉑ : 3.6Vp-p
CP-19P BOARD ⑲,⑳,㉑

Seite 86 leer

AF-32(AUTO FOCUS CONTROL) PRINTED WIRING BOARD

—Ref. No. AF-32 BOARD : 7, 000 series—

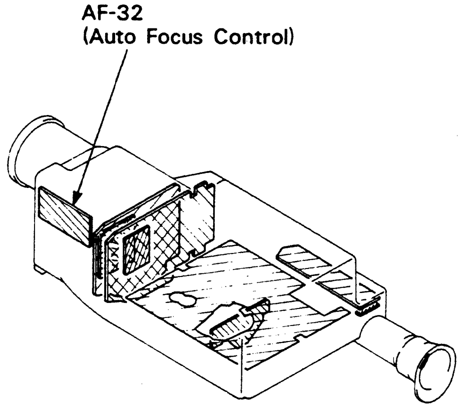
Note:

- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- : Pattern of the rear side.

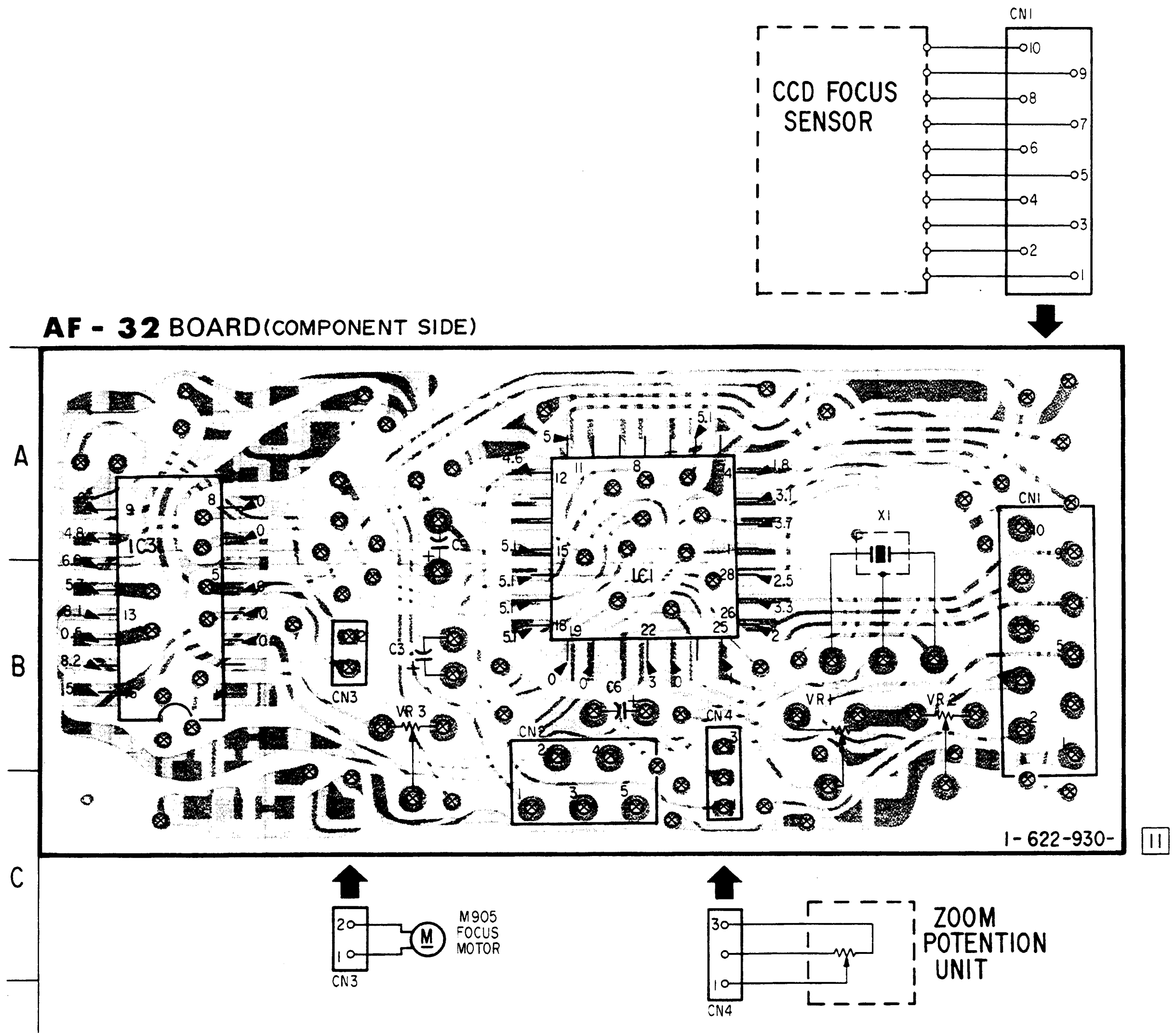
Caution:	
Pattern face side: (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

When indicating parts by reference number, please include the board name.

CN1	B-5
CN2	C-3
CN3	B-2
CN4	C-4
IC1	B-3
IC2	F-3
IC3	B-1
Q1	F-1
Q2	F-2
VR1	B-4
VR2	B-5
VR3	B-2

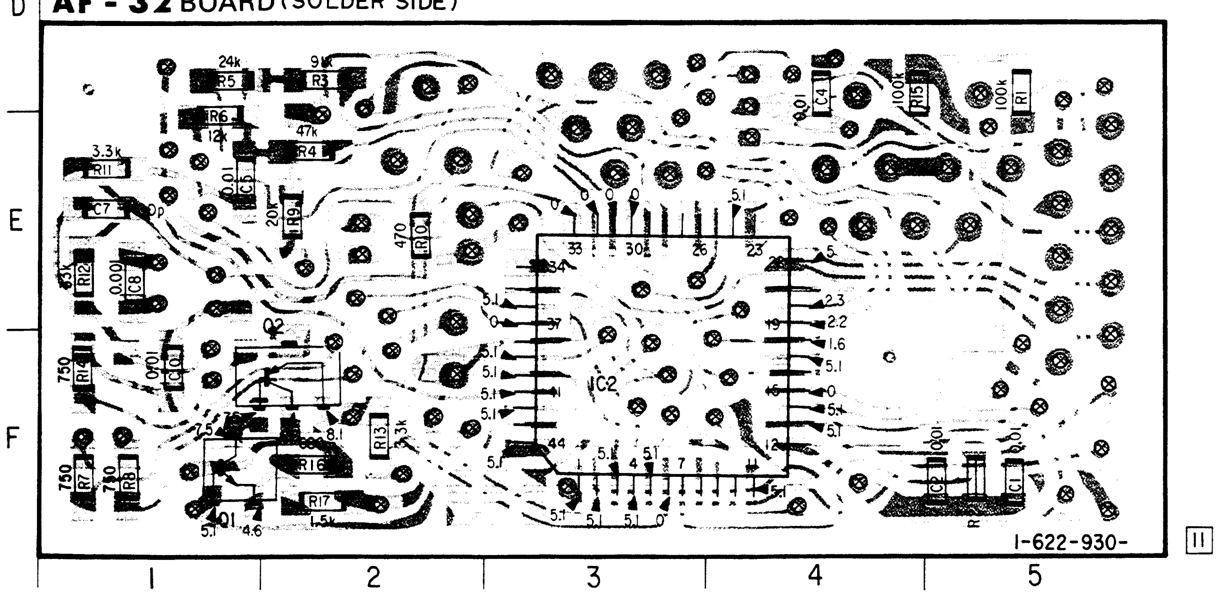

AF-32
(Auto Focus Control)

AF - 32 BOARD(COMPONENT SIDE)


CCD FOCUS SENSOR
CN1
10
9
8
7
6
5
4
3
2
1
A
B
C
IC3
IC1
X1
CN3
VR 3
CN2
CN4
VR1
VR2
C3
C6
1-622-930-
11
M905 FOCUS MOTOR
M
CN3
CN4
ZOOM POTENTION UNIT

no mark : REC mode

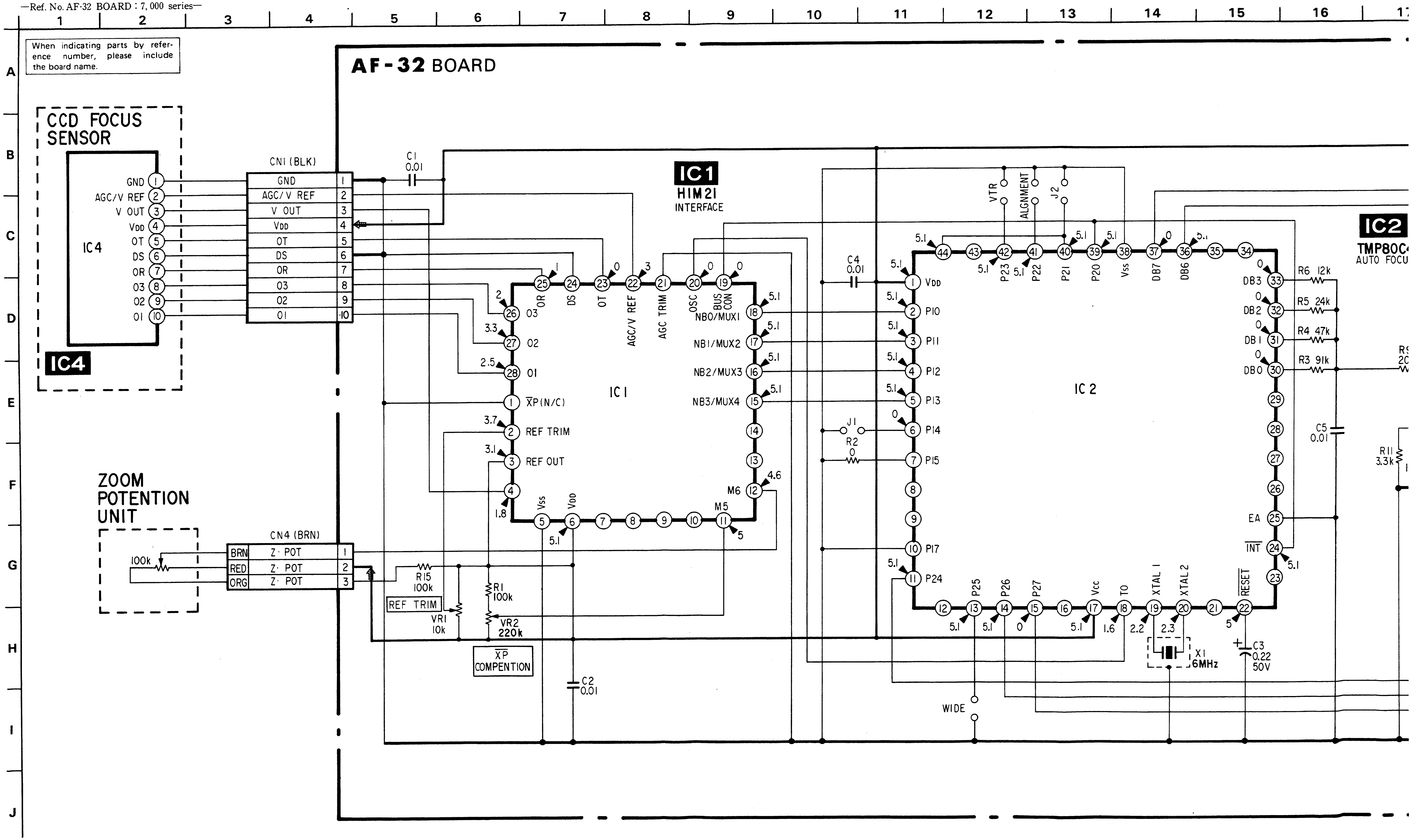
AF - 32 BOARD(SOLDER SIDE)

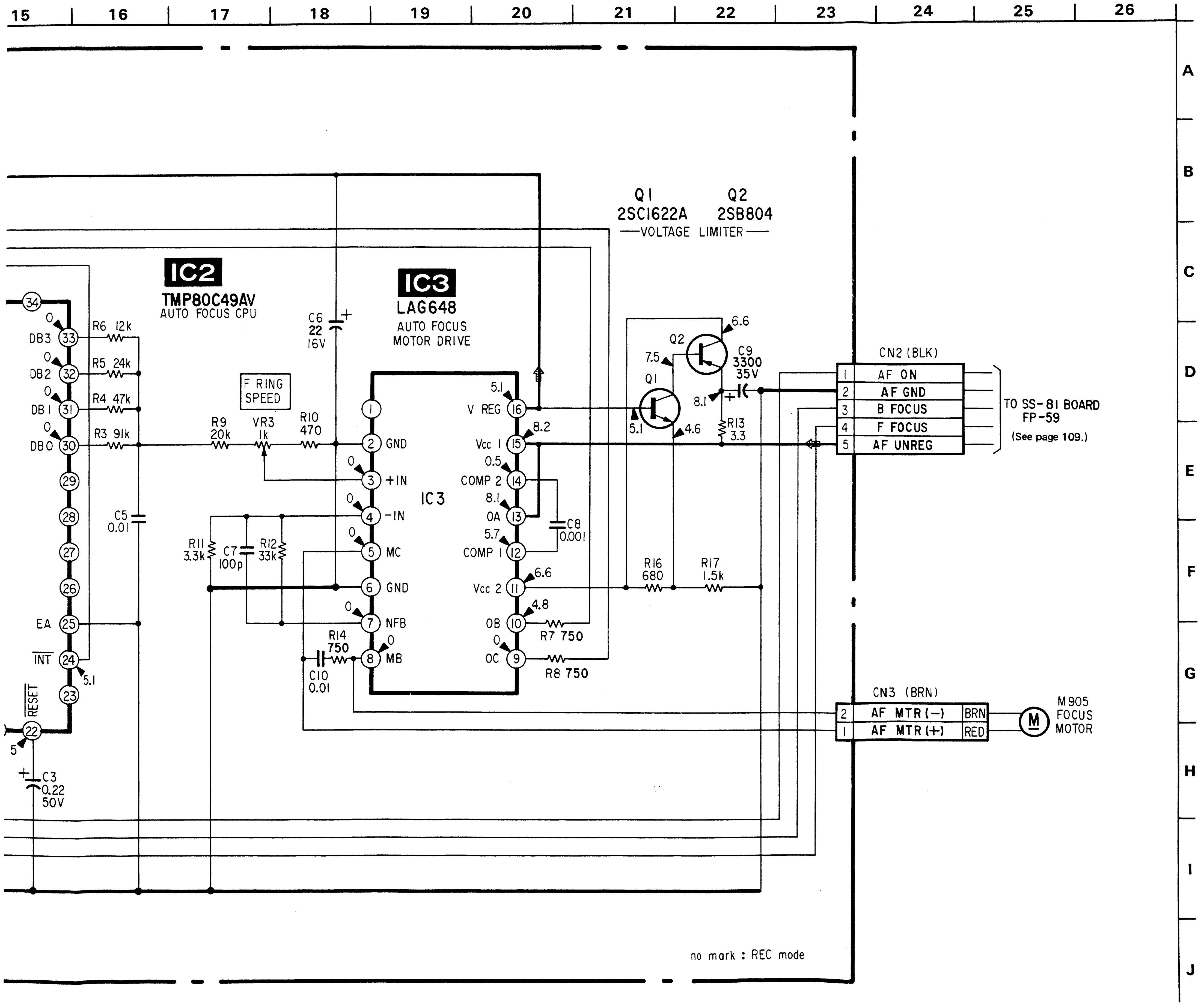

D
E
F
24k
R5
91k
R3
R6
12k
47k
R4
3.3k
R11
C7
0.01
C5
20k
R9
470
R10
0.01
C4
100k
R15
100k
R1
R12
0.001
C8
IC2
Q2
750
R14
0.001
C10
R13
3.3k
R16
R17
1.5k
Q1
750
R7
750
R8
C2
C1
1-622-930-
11
1
2
3
4
5

AF-32(AUTO FOCUS CONTROL) SCHEMATIC DIAGRAM

—Ref. No. AF-32 BOARD : 7, 000 series—

When indicating parts by reference number, please include the board name.

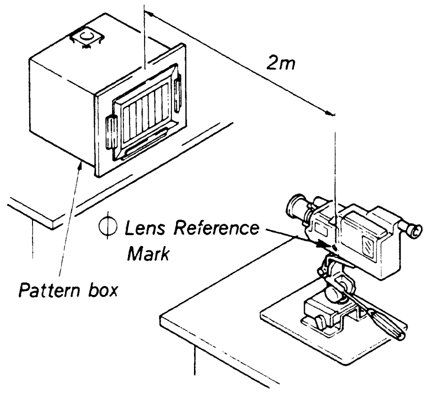

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
AF-32 BOARD
CCD FOCUS SENSOR
IC4
GND
AGC/V REF
V OUT
VDD
OT
DS
OR
03
02
01
CN1 (BLK)
C1 0.01
IC1
HIM21
INTERFACE
OR
DS
OT
AGC/V REF
AGC TRIM
OSC
BUS CON
NB0/MUX1
NB1/MUX2
NB2/MUX3
NB3/MUX4
XP(N/C)
REF TRIM
REF OUT
M6
M5
Vss
VDD
ZOOM POTENTION UNIT
100k
CN4 (BRN)
BRN
RED
ORG
Z· POT
R15 100k
R1 100k
VR1 10k
VR2 220k
XP COMPENTION
C2 0.01
C4 0.01
J1
R2 0
VTR
ALGNMENT
J2
WIDE
IC2
TMP80C
AUTO FOCU
P10
P11
P12
P13
P14
P15
P17
P24
P25
P26
P27
Vcc
T0
XTAL 1
XTAL 2
RESET
P23
P22
P21
P20
Vss
DB7
DB6
DB3
DB2
DB1
DB0
EA
INT
R6 12k
R5 24k
R4 47k
R3 91k
C5 0.01
R11 3.3k
X1 6MHz
C3 0.22 50V
5.1
3.7
3.1
1.8
4.6
3.3
2.5
1.6
2.2
2.3


15
16
17
18
19
20
21
22
23
24
25
26
A
B
C
D
E
F
G
H
I
J
IC2
TMP80C49AV
AUTO FOCUS CPU
IC3
LAG648
AUTO FOCUS MOTOR DRIVE
IC3
Q1 2SC1622A
Q2 2SB804
VOLTAGE LIMITER
DB3 33
DB2 32
DB1 31
DB0 30
EA 25
INT 24
RESET 23
22
34
29
28
27
26
R6 12k
R5 24k
R4 47k
R3 91k
C5 0.01
C3 0.22 50V
F RING SPEED
R9 20k
VR3 1k
R10 470
C6 22 16V
R11 3.3k
C7 100p
R12 33k
R14 750
C10 0.01
1
2 GND
3 +IN
4 -IN
5 MC
6 GND
7 NFB
8 MB
16 V REG
15 Vcc 1
14 COMP 2
13 OA
12 COMP 1
11 Vcc 2
10 OB
9 OC
5.1
8.2
0.5
8.1
5.7
6.6
4.8
7.5
4.6
R7 750
R8 750
R16 680
R17 1.5k
C8 0.001
C9 3300 35V
R13 3.3
CN2 (BLK)
1 AF ON
2 AF GND
3 B FOCUS
4 F FOCUS
5 AF UNREG
TO SS-81 BOARD FP-59
(See page 109.)
CN3 (BRN)
2 AF MTR (−) BRN
1 AF MTR (+) RED
M
M905 FOCUS MOTOR
no mark : REC mode

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▭ : Nonflammable resistor
- —— : B+ bus.
- ⇨ : IN/OUT direction of B+, B− bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box color bars.
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Φ Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

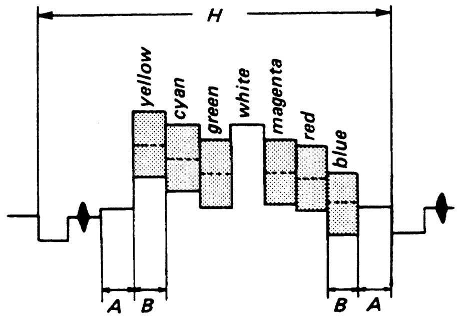

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform of TP801 on VC-24P board.

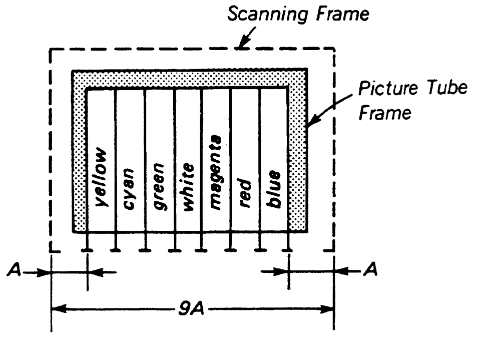

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

Fig. b Picture of TV monitor screen

VA-36 (VIDEO PROCESS, AUDIO PROCESS), MC-34 (MIC AMP), NR-1 (NOISE CANCEL), AT-6 (ATF SERVO)

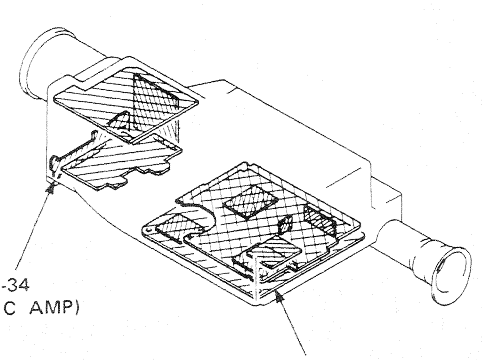
– Ref. No. MC-34 BOARD: 1,000 series, VA-36, NR-1 and AT-6 BOARD: 2,000 series –

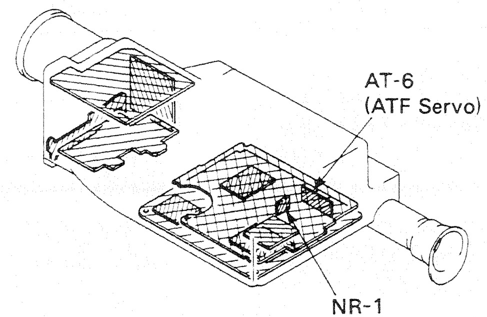
Note:

- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- Pattern of the rear side.
- Digital transistor (VA-36 board: Q252, Q336, Q337, Q340, Q342, Q346, Q350, Q351, Q353, Q358, Q363, Q364, Q376): transistor with resistor.
  Refer to the VA-36 board schematic diagram for digital transistor.

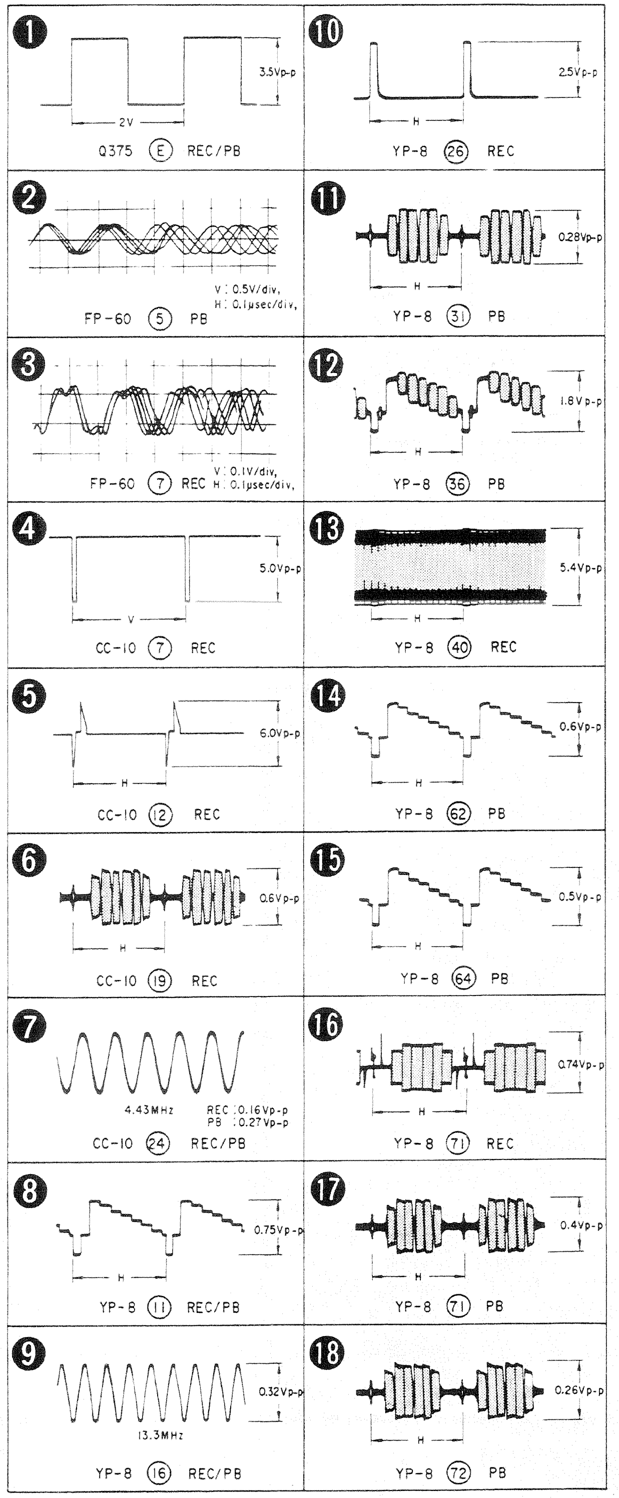
Caution:
Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

When indicating parts by reference number, please include the board name.


MC-34
(MIC AMP)
VA-36
(Video Process
Audio Process)

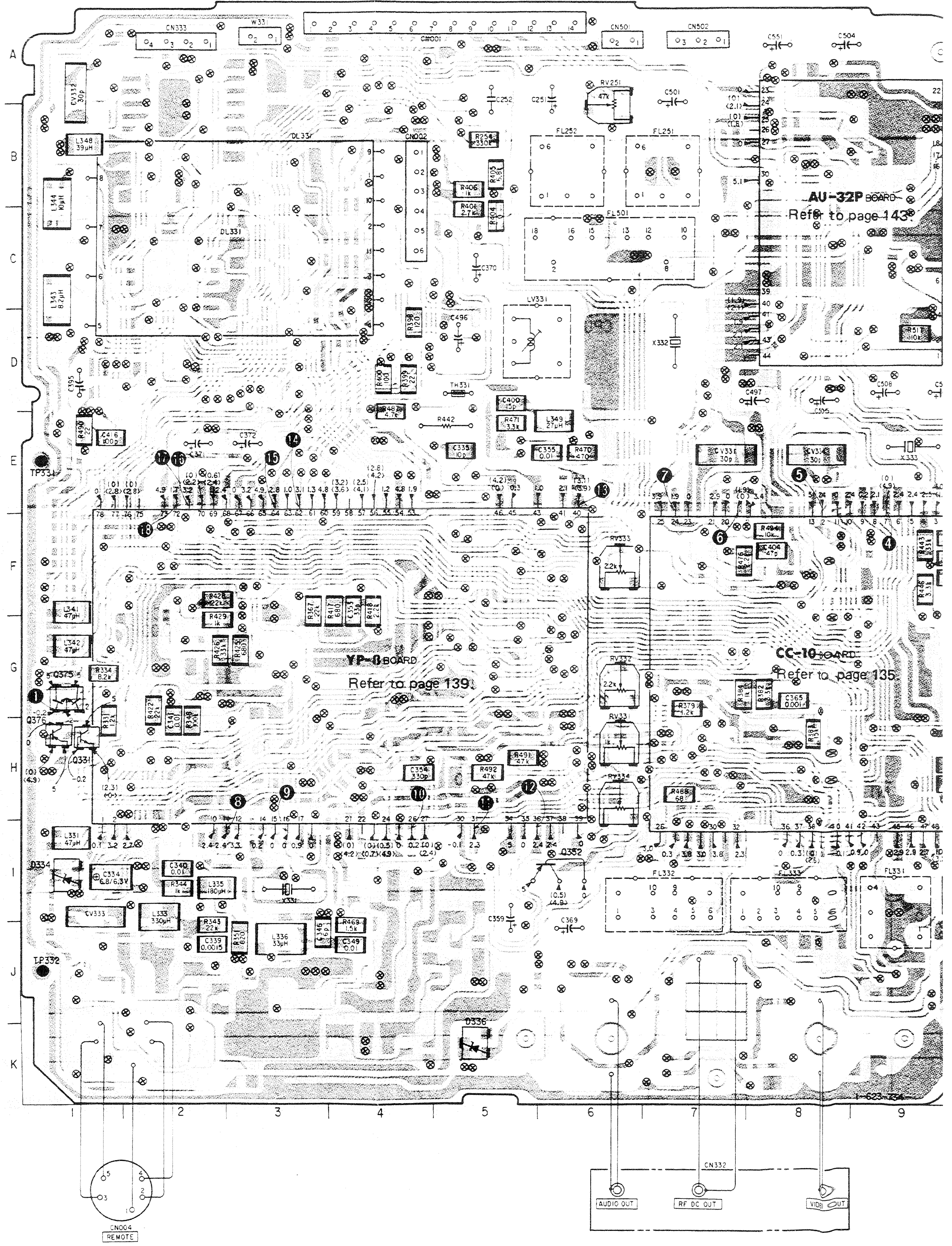

AT-6
(ATF Servo)
NR-1
(Noise Cancel)

VA-36 BOARD



CN001	A-4
CN002	B-4
CN333	A-2
CN501	A-6
CN502	A-7
CV331	E-7
CV332	A-1
CV333	I-1
CV334	E-8
D331	K-19
D332	J-19
D333	J-20
D334	I-1
D335	J-18
D336	K-5
D338	D-20
D339	J-13
D340	K-13
D341	J-14
D342	J-16
D343	K-16
D344	A-20
D501	A-13
IC331	G-19
IC332	C-16
IC333	B-19
Q251	B-16
Q252	A-17
Q331	H-1
Q332	I-20
Q333	H-19
Q334	H-18
Q335	I-19
Q336	I-18
Q337	H-18
Q339	J-17
Q340	H-17
Q341	H-17
Q342	I-17
Q343	E-16
Q346	H-13
Q347	G-15
Q348	H-14
Q349	G-13
Q350	F-15
Q351	H-15
Q352	I-6
Q353	D-18
Q354	C-17
Q356	B-19
Q357	B-18
Q358	G-20
Q359	F-18
Q361	F-18
Q362	F-20
Q363	G-18
Q364	F-17
Q366	G-12
Q367	D-19
Q368	C-19
Q369	K-14
Q370	J-15
Q371	K-14
Q373	E-14
Q375	G-1
Q376	H-1
Q377	F-14
Q378	H-12
Q379	E-13
RV251	A-6
RV331	H-6
RV332	G-6
RV333	F-6
RV334	H-6
TP331	E-1
TP332	J-1
W331	A-3

VA-36 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
J
K
1
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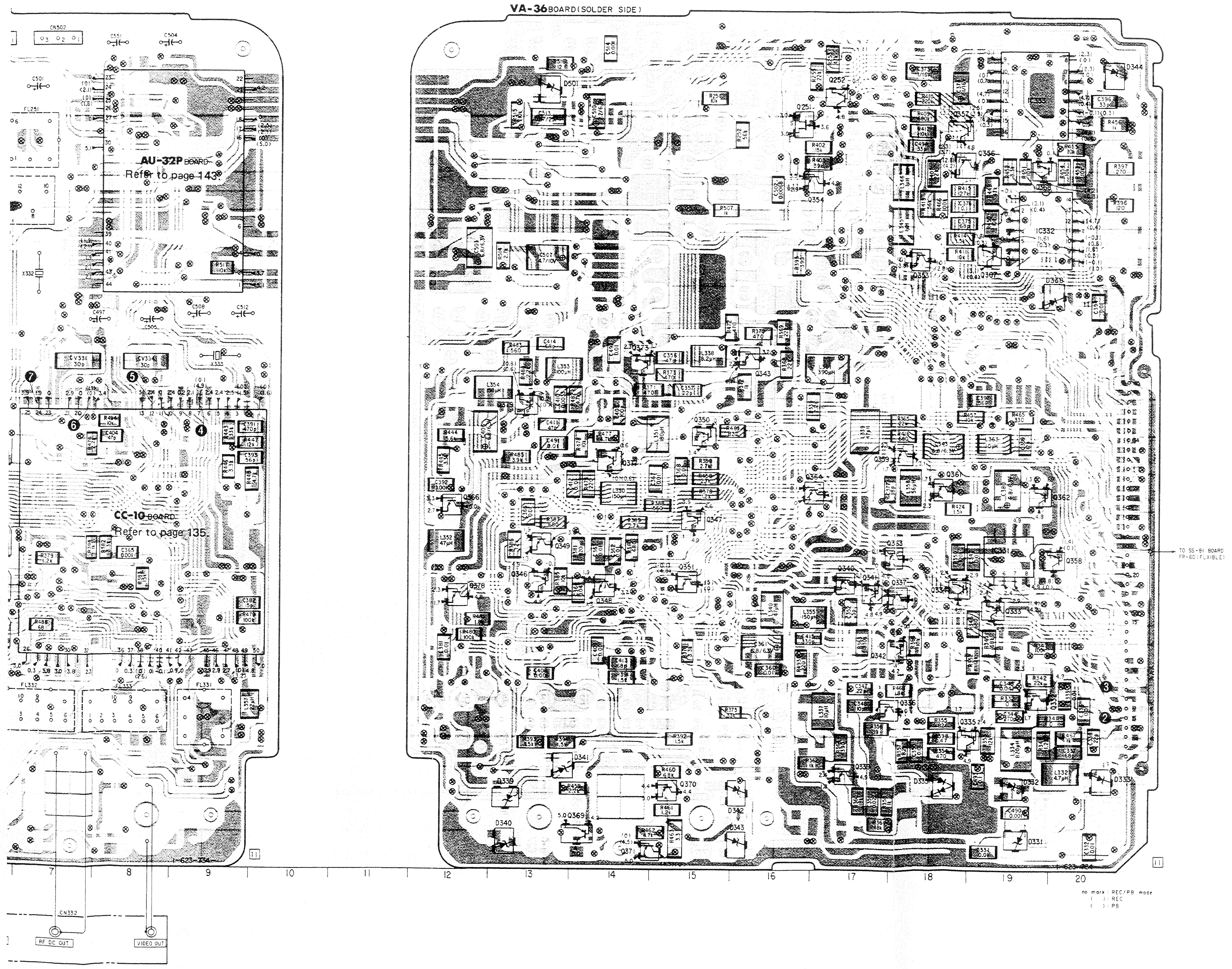
8
9
CN333
W331
CN001
CN501
CN502
CN002
DL331
FL252
FL251
FL501
LV331
AU-32P BOARD
Refer to page 143
YP-8 BOARD
Refer to page 139
CC-10 BOARD
Refer to page 135
TP331
TP332
Q375
Q331
Q336
Q352
RV333
RV332
RV331
RV334
FL332
FL331
CN332
AUDIO OUT
RF DC OUT
VIDEO OUT
CN004
REMOTE

VIDEO(1)/AUDIO VIDEO(1)/AUDIO

ISE CANCEL), AT-6 (ATF SERVO) PRINTED WIRING BOARDS


VA-36 BOARD (SOLDER SIDE)
AU-32P BOARD
Refer to page 143
CC-10 BOARD
Refer to page 135
CN502
CN332
RF DC OUT
VIDEO OUT
TO SS-81 BOARD
FP-60 (FLXIBLE)
1-623-334-
7
8
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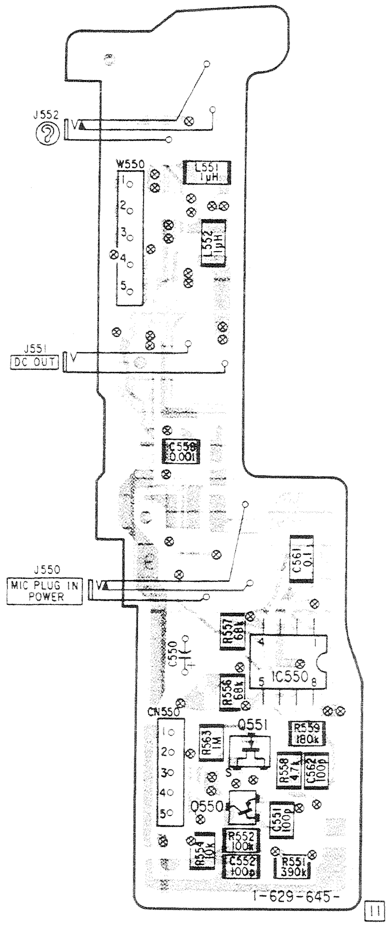
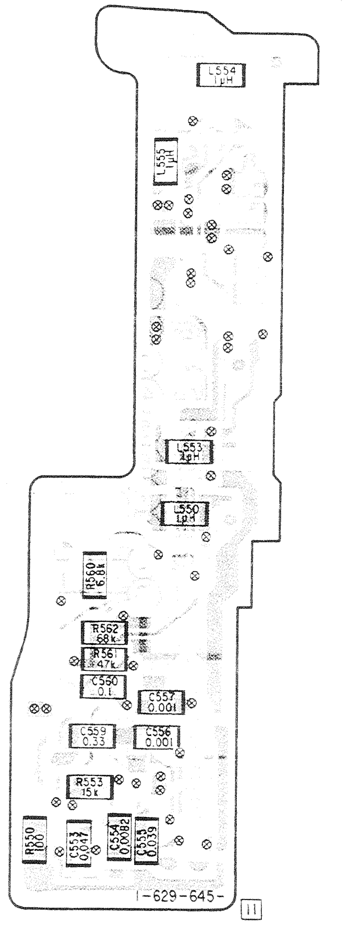
no mark : REC/PB mode
( ) : REC
( ) : PB

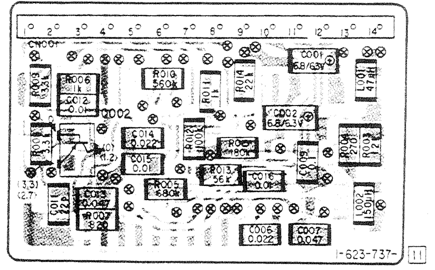
MC-34 BOARD (COMPONENT SIDE)


J552
J551
DC OUT
J550
MIC PLUG IN POWER
IC550
Q550
Q551
1-629-645-

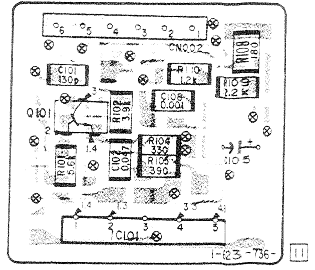
MC-34 BOARD (SOLDER SIDE)



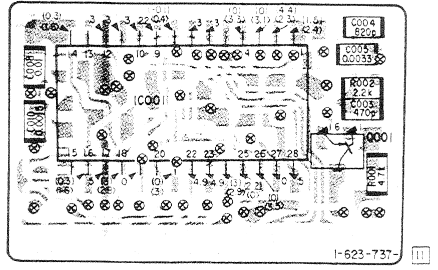
AT-6 BOARD (COMPONENT SIDE)


CN001
1-623-737-

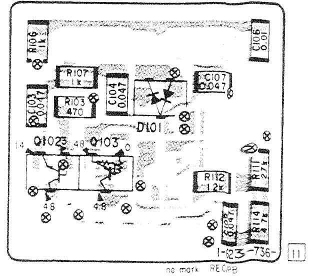
NR-1 BOARD (COMPONENT SIDE)


CN002
Q101
IC101
1-123-736-

AT-6 BOARD (SOLDER SIDE)


IC001
Q001
1-623-737-

NR-1 BOARD (SOLDER SIDE)


D101
Q102
Q103
1-623-736-

no mark : REC/PB
( ) : REC
( ) : PB

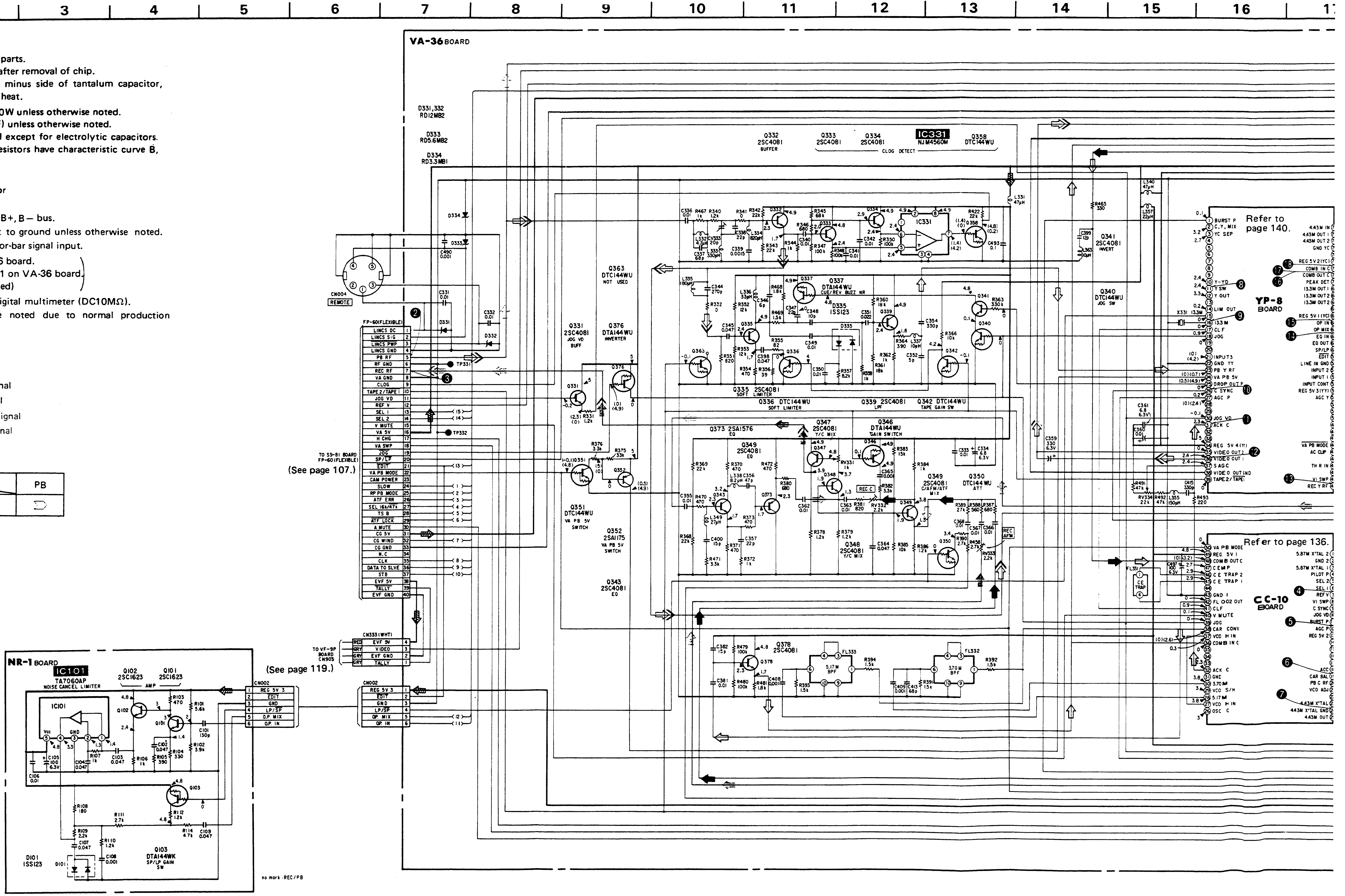
VA-36 (VIDEO PROCESS, AUDIO PROCESS), MC-34 (MIC AMP), NR-1 (NOISE CANCEL), AT-6 (ATF SERVO) SCHEMATIC DIAGRAM

– Ref. No. MC-34 BOARD: 1,000 series. VA-36, NR-1 and AT-6 BOARD: 2,000 series –

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▭ : Nonflammable resistor
- —— : B+ bus.
- ⇨ : IN/OUT direction of B+, B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated)
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- **Signal path**
  - ⇨ : REC Y Signal
  - ⇨ : PB Y Signal
  - ➡ : REC CHROMA Signal
  - ⇨ : PB CHROMA Signal
  - ⇨ : REC Y/CHROMA Signal
  - ⇨ : PB Y/CHROMA Signal
  - ⇨ : REC AUDIO Signal
  - ⇨ : PB AUDIO Signal

	PB
Ref. signal	⇨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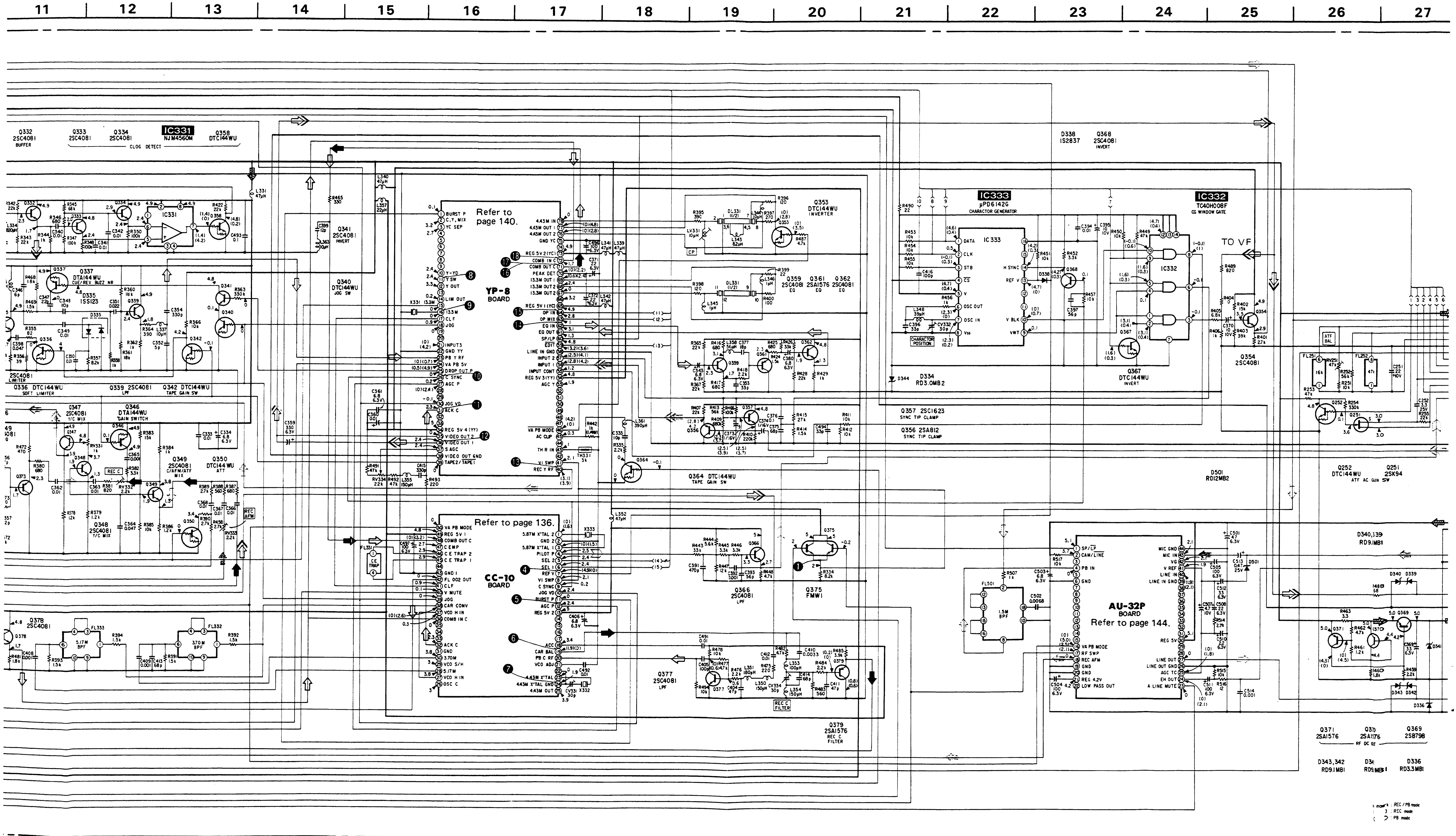
A
B
C
D
E
F
G
H
I
J
VA-36 BOARD
D331,332 RD12MB2
D333 RD5.6MB2
D334 RD3.3MB1
Q332 2SC4081 BUFFER
Q333 2SC4081
Q334 2SC4081
IC331 NJM4560M
Q358 DTC144WU
CLOG DETECT
CN004 REMOTE
FP-60(FLEXIBLE)
LINCS DC
LINCS SIG
LINCS PWP
LINCS GND
PB RF
RF GND
REC RF
VA GND
CLOG
TAPE 2/TAPE 1
JOG VD
REF V
SEL 1
SEL 2
V MUTE
VA 5V
H CHG
VA SWP
JOG
SP/LP
EDIT
VA PB MODE
CAM POWER
SLOW
RP PB MODE
ATF ERR
SEL 16k/47k
TS B
ATF LOCK
A MUTE
CG 5V
CG WIND
CG GND
N.C
CLK
DATA TO SLVE
STB
EVF 5V
TALLY
EVF GND
TO SS-81 BOARD FP-60(FLEXIBLE)
(See page 107.)
TP331
TP332
C331 0.01
C332 0.01
C490 0.001
CN333(WHT)
EVF 5V
VIDEO
EVF GND
TALLY
TO VF-9P BOARD CN905
(See page 119.)
Q363 DTC144WU NOT USED
Q331 2SC4081 JOG VD BUFF
Q376 DTA144WU INVERTER
Q351 DTC144WU VA PB 5V SWITCH
Q352 2SA1175 VA PB 5V SWITCH
Q343 2SC4081 EQ
Q337 DTA144WU CUE/REV BUZZ NR
D335 1SS123
Q335 2SC4081 SOFT LIMITER
Q336 DTC144WU SOFT LIMITER
Q339 2SC4081 LPF
Q342 DTC144WU TAPE GAIN SW
Q340 DTC144WU JOG SW
Q341 2SC4081 INVERT
Q373 2SA1576 EQ
Q349 2SC4081 EQ
Q347 2SC4081 Y/C MIX
Q346 DTA144WU GAIN SWITCH
Q349 2SC4081 C/AFM/ATF MIX
Q350 DTC144WU ATT
Q348 2SC4081 Y/C MIX
REC C
REC AFM
Q378 2SC4081
FL333 5.17M BPF
FL332 3.70M BPF
FL331 CE TRAP
Refer to page 140.
YP-8 BOARD
BURST P
C.Y. MIX
YC SEP
Y-YD
Y SW
Y OUT
LIM OUT
13.3M
CLF
JOG
INPUT3
GND YY
PB Y RF
VA PB 5V
DROP OUT P
C SYNC
AGC P
JOG VD
ACK C
REG 5V 4(Y)
VIDEO OUT 2
VIDEO OUT 1
S AGC
VIDEO OUT IND
TAPE 2/TAPE 1
Refer to page 136.
CC-10 BOARD
VA PB MODE
REG 5V 1
COMB OUTC
CEMP
CE TRAP 2
CE TRAP 1
GND 1
FL 002 OUT
CLF
V MUTE
JOG
CAR CONV
VCO H IN
COMB IN C
ACK C
GND
3.70M
VCO S/H
5.17M
VCO H IN
OSC C
NR-1 BOARD
IC101 TA7060AP NOISE CANCEL LIMITER
Q102 2SC1623
Q101 2SC1623
AMP
Q103 DTA144WK SP/LP GAIN SW
D101 1SS123
CN002
REG 5V 3
EDIT
GND
LP/SP
OP MIX
OP IN
no mark : REC/PB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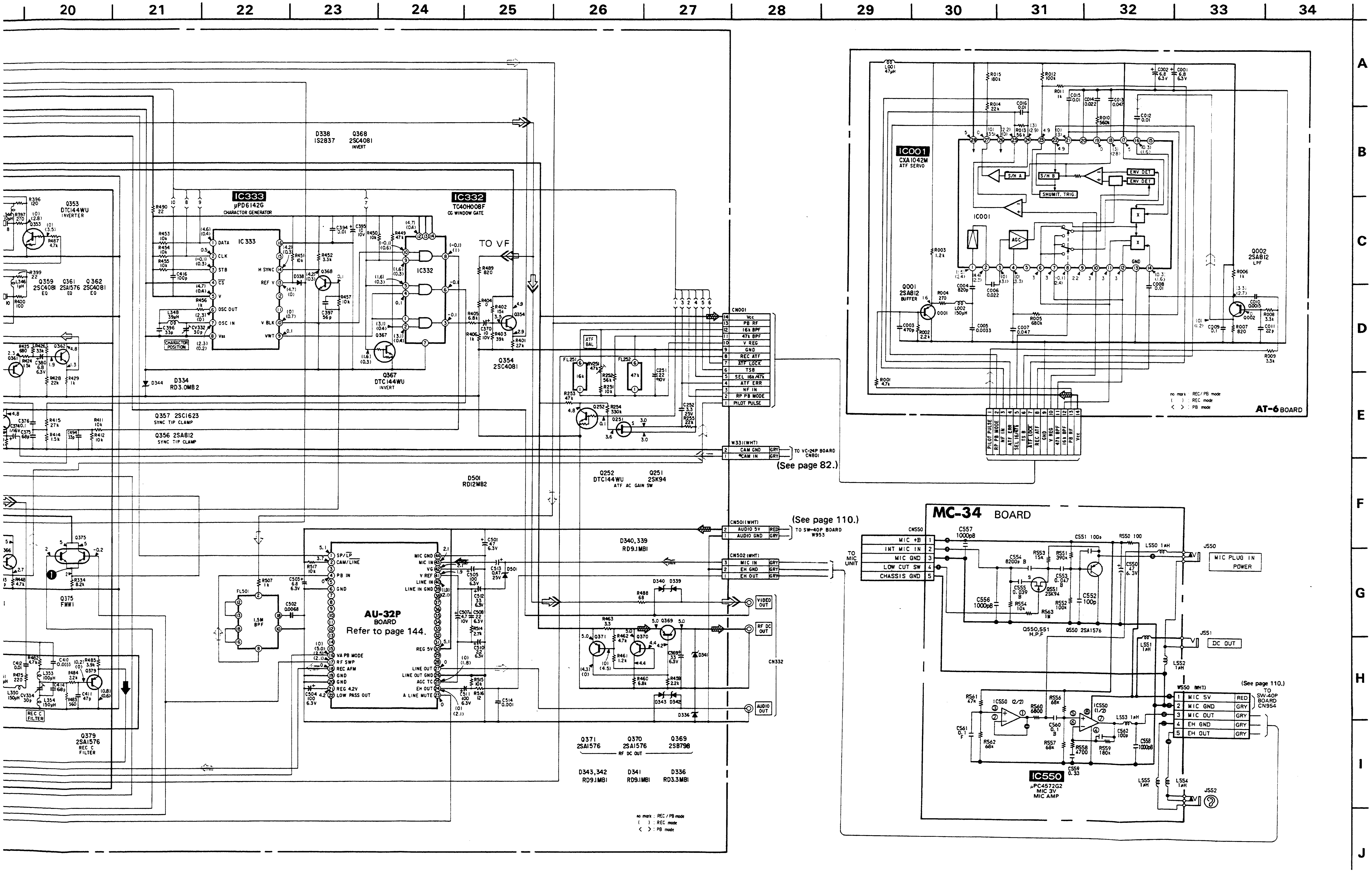
27
Q332 2SC4081 BUFFER
Q333 2SC4081
Q334 2SC4081
CLOG DETECT
IC331 NJM4560M
Q358 DTC144WU
Q337 DTA144WU CUE/REV BUZZ NR
Q335 1SS123
Q336 DTC144WU SOFT LIMITER
Q339 2SC4081 LPF
Q342 DTC144WU TAPE GAIN SW
Q347 2SC4081 Y/C MIX
Q346 DTA144WU GAIN SWITCH
Q349 2SC4081 C/AFM/ATF MIX
Q350 DTC144WU ATT
Q348 2SC4081 Y/C MIX
Q378 2SC4081
FL333 5.17M BPF
FL332 3.70M BPF
REC C
REC AFM
Q341 2SC4081 INVERT
Q340 2SC4081 JOG SW
Refer to page 140.
YP-8 BOARD
BURST P
C,Y, MIX
YC SEP
Y-YD
Y SW
Y OUT
LIM OUT
13.3M
CLF
JOG
INPUT3
GND YY
PB Y RF
VA PB 5V
DROP OUT P
C SYNC
AGC P
JOG VD
ACK C
REG 5V 4 (YY)
VIDEO OUT 2
VIDEO OUT 1
S AGC
VIDEO OUT GND
TAPE2/TAPE1
4.43M IN
4.43M OUT 1
4.43M OUT 2
GND YC
REG 5V 2(YC)
COMB IN C
COMB OUT C
PEAK DET
13.3M OUT 1
13.3M OUT 2
REG 5V 1 (YC)
OP IN
OP MIX
EQ IN
EQ OUT
SP/LP
EDIT
LINE IN GND
INPUT 2
INPUT 1
INPUT CONT
REG 5V 3(YY)
AGC Y
VA PB MODE
AC CLIP
TH R IN
V1 SWP
REC Y RF
Refer to page 136.
CC-10 BOARD
VA PB MODE
REG 5V 1
COMB OUT C
C EMP
C E TRAP 2
C E TRAP 1
GND 1
FL 002 OUT
CLF
V MUTE
JOG
CAR CONV
VCO H IN
COMB IN C
ACK C
GND
3.70M
VCO S/H
5.17M
VCO H IN
OSC C
5.87M X'TAL 2
GND 2
5.87M X'TAL 1
PILOT P
SEL 2
SEL 1
REF V
VI SWP
C SYNC
JOG VD
BURST P
AGC P
REG 5V 2
ACC
CAR BAL
PB C RF
VCO ADJ
4.43M X'TAL
4.43M X'TAL GND
4.43M OUT
FL331 CE TRAP
Q353 DTC144WU INVERTER
DL331
Q359 2SC4081 EQ
Q361 2SA1576 EQ
Q362 2SC4081 EQ
Q357 2SC1623 SYNC TIP CLAMP
Q356 2SA812 SYNC TIP CLAMP
Q364 DTC144WU TAPE GAIN SW
Q366 2SC4081 LPF
Q375 FMW1
Q377 2SC4081 LPF
Q379 2SA1576 REC C FILTER
REC C FILTER
D338 1S2837
Q368 2SC4081 INVERT
IC333 µPD6142G CHARACTOR GENERATOR
DATA
CLK
STB
CS
V
OSC OUT
OSC IN
Vss
H SYNC
REF V
V BLK
VWT
CHARACTOR POSITION
D344
D334 RD3.0MB2
IC332 TC40H008F CG WINDOW GATE
TO VF
Q367 DTC144WU INVERT
Q354 2SC4081
D501 RD12MB2
FL501 1.5M BPF
AU-32P BOARD
Refer to page 144.
SP/LP
CAM/LINE
PB IN
GND
VA PB MODE
RF SWP
REC AFM
GND
GND
REG 4.2V
LOW PASS OUT
MIC GND
MIC IN
VG
V REF
LINE IN
LINE IN GND
REG 5V
LINE OUT
LINE OUT GND
AGC TC
EH OUT
A LINE MUTE
ATF BAL
Q252 DTC144WU
Q251 2SK94
ATF AC GAIN SW
D340,339 RD9.1MB1
Q371 2SA1576
Q370 2SA1176 RF DC OI
Q369 2SB798
D343,342 RD9.1MB1
D341 RD9.1MB1
D336 RD3.3MB1
mark : REC / PB mode
] : REC mode
( ) : PB mode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34
A
B
C
D
E
F
G
H
I
J
IC333
μPD6142G
CHARACTOR GENERATOR
IC332
TC40H008F
CG WINDOW GATE
TO VF
D338 1S2837
Q368 2SC4081 INVERT
Q353 DTC144WU INVERTER
Q359 2SC4081 EQ
Q361 2SA1576 EQ
Q362 2SC4081 EQ
D334 RD3.0MB2
Q357 2SC1623 SYNC TIP CLAMP
Q356 2SA812 SYNC TIP CLAMP
Q367 DTC144WU INVERT
Q354 2SC4081
CHARACTOR POSITION
ATF BAL
CN001
Vcc
PB RF
16k BPF
47k BPF
V REG
GND
REC ATF
ATF LOCK
TSB
SEL 16k/47k
ATF ERR
NF IN
RP PB MODE
PILOT PULSE
W331(WHT)
CAM GND
CAM IN
TO VC-24P BOARD CN801
(See page 82.)
Q252 DTC144WU
Q251 2SK94
ATF AC GAIN SW
D501 RD12MB2
IC001
CXA1042M
ATF SERVO
S/H A
S/H B
SHUMIT. TRIG.
ENV DET
AGC
Q001 2SA812 BUFFER
Q002 2SA812 LPF
AT-6 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN501(WHT)
AUDIO 5V
AUDIO GND
(See page 110.)
TO SW-40P BOARD W953
CN502(WHT)
MIC IN
EH GND
EH OUT
D340,339 RD9.1MB1
AU-32P BOARD
Refer to page 144.
FL501
1.5M BPF
SP/LP
CAM/LINE
PB IN
GND
VA PB MODE
RF SWP
REC AFM
REG 4.2V
LOW PASS OUT
MIC GND
MIC IN
VG
V REF
LINE IN
LINE IN GND
REG 5V
LINE OUT
LINE OUT GND
AGC TC
EH OUT
A LINE MUTE
VIDEO OUT
RF DC OUT
AUDIO OUT
CN332
Q375 FMW1
Q379 2SA1576 REC C FILTER
REC C FILTER
Q371 2SA1576
Q370 2SA1576
Q369 2SB798
RF DC OUT
D343,342 RD9.1MB1
D341 RD9.1MB1
D336 RD3.3MB1
MC-34 BOARD
CN550
MIC +B
INT MIC IN
MIC GND
LOW CUT SW
CHASSIS GND
TO MIC UNIT
J550
MIC PLUG IN POWER
J551
DC OUT
Q550,551 H.P.F
Q550 2SA1576
Q551 2SK94
W550 (WHT)
MIC 5V
MIC GND
MIC OUT
EH GND
EH OUT
RED
GRY
TO SW-40P BOARD CN954
IC550
μPC4572G2
MIC 3V
MIC AMP
J552

VIDEO(2)/SERVO/SYSTEM CONTROL

SS-81(SERVO, SYSTEM CONTROL, REC/PB AMP), SW-40P(CAMERA SWITCH), CC-7(MODE SWITCH), FP-53(T/S REEL SENSOR), FP-57(BATTERY HOLDER/RELAY), FP-70P(BA

—Ref. No. SS-81 and SW-40P BOARDS : 1, 000 series, FP-53 BOARD : 3, 000 series, FP-70P BOARD : 4, 000 series, CC-7 BOARD : 5, 000 series, FP-57 BOARD : 6, 000 series—

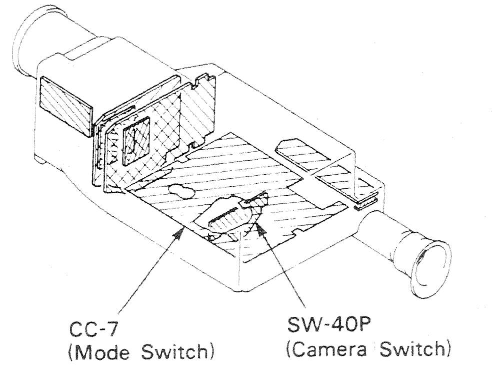
Note:

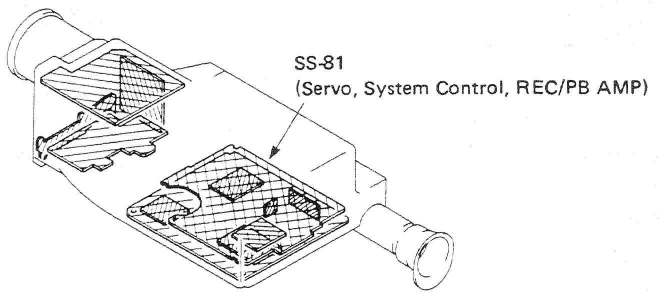
- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- Digital transistor (SS-81 board: Q009, Q012, Q014, Q018, Q019, Q022, Q023, Q024, Q025, Q216, Q217, Q219, SW-40P board: Q951): transistor with resistor.
  Refer to the SS-81, SW-40P boards schematic diagram for digital transistor.

Caution:

Pattern face side: (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

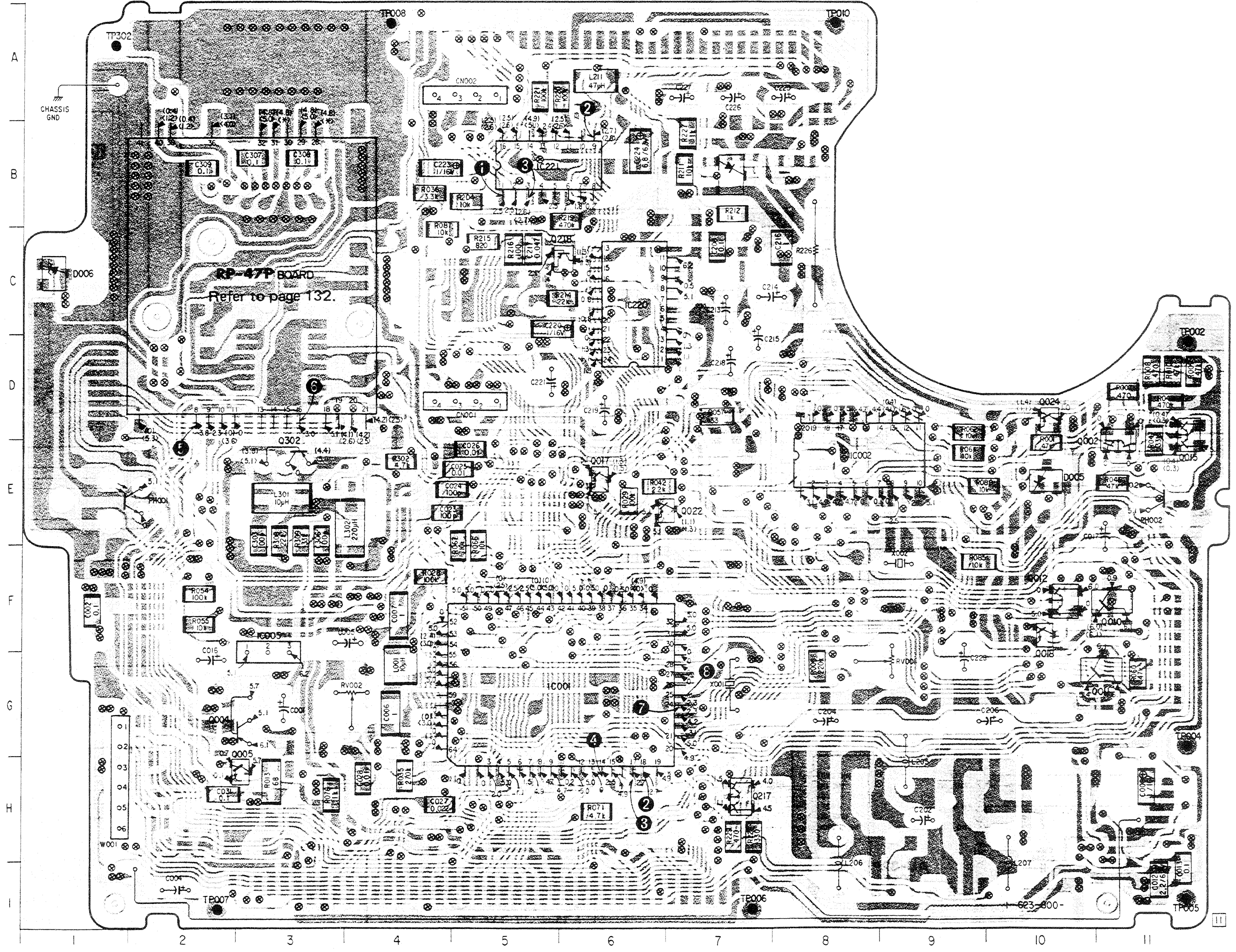
When indicating parts by reference number, please include the board name.


CC-7
(Mode Switch)
SW-40P
(Camera Switch)


SS-81
(Servo, System Control, REC/PB AMP)

CN001	D-5
CN002	A-5
CN003	F-22
CN301	B-21
CN302	D-22
D001	B-20
D002	D-16
D003	H-18
D004	H-18
D005	E-10
D006	C-1
D007	C-19
D008	E-17
D009	D-17
D208	H-16
D209	H-15
D223	B-7
FP-57	A-16
FP-59	D-12
FP-60	I-19
FP-71	G-12
IC001	G-5
IC002	E-8
IC003	D-21
IC004	H-22
IC005	F-3
IC220	C-6
IC221	B-5
IC222	B-17
Q001	E-14
Q002	D-11
Q004	G-3
Q005	H-3
Q006	C-22
Q007	C-21
Q009	G-20
Q010	F-11
Q011	G-11
Q012	F-10
Q013	F-13
Q014	C-19
Q015	D-11
Q016	F-22
Q017	E-6
Q018	F-10
Q019	F-17
Q020	H-21
Q021	H-21
Q022	E-6
Q023	F-17
Q024	D-10
Q025	E-16
Q203	I-16
Q204	I-15
Q216	F-18
Q217	H-7
Q218	C-6
Q219	C-18
Q302	E-3
Q303	E-21
PH001	E-2
PH002	E-11
RV001	G-9
RV002	G-4
TP002	D-11
TP004	G-11
TP007	I-2
TP008	A-4
TP010	A-8
TP302	A-1
W001	H-1

SS-81 BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
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6
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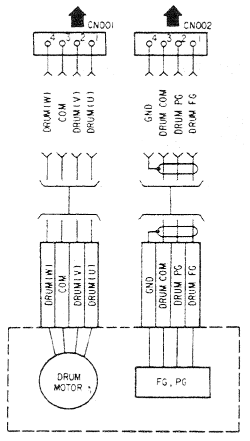
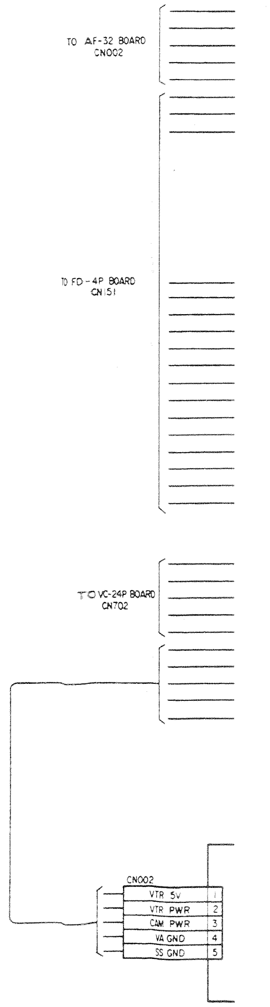
8
9
10
11
CHASSIS GND
TP302
TP008
TP010
TP002
TP004
TP005
TP006
TP007
D006
IC001
IC002
IC220
W001
1-623-800-

RP-47P BOARD
Refer to page 132.

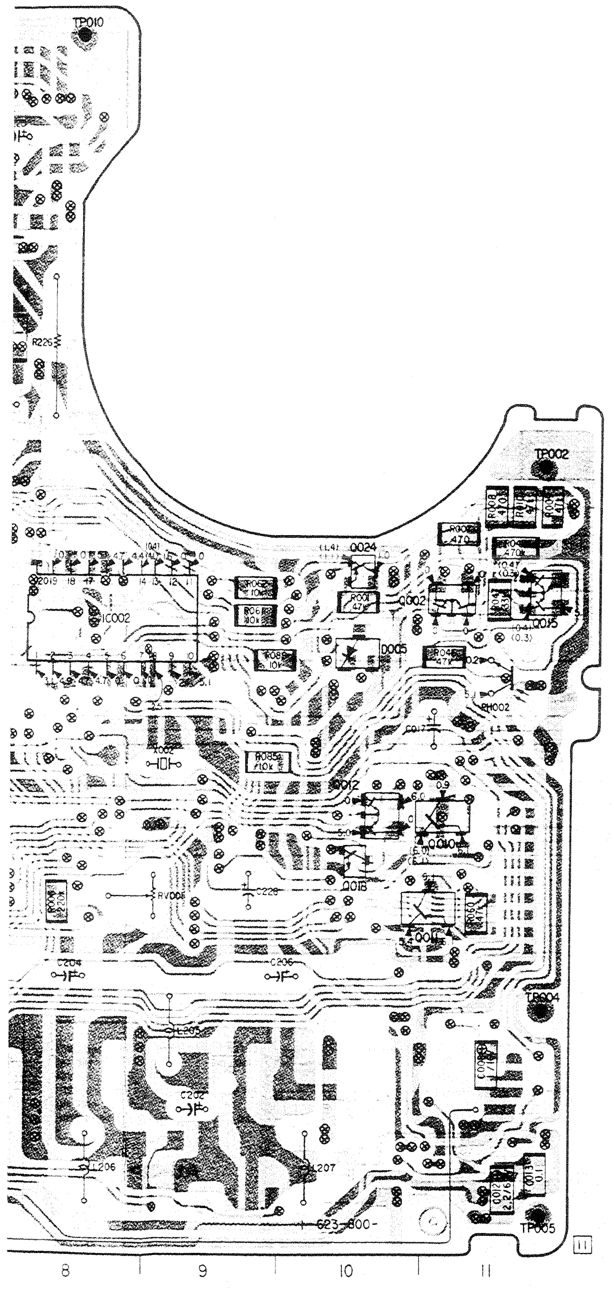
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
Marked ✻ is not able to measure the voltage of it's position.


CN001
CN002
DRUM(W)
COM
DRUM(V)
DRUM(U)
GND
DRUM COM
DRUM PG
DRUM FG
DRUM MOTOR
FG, PG

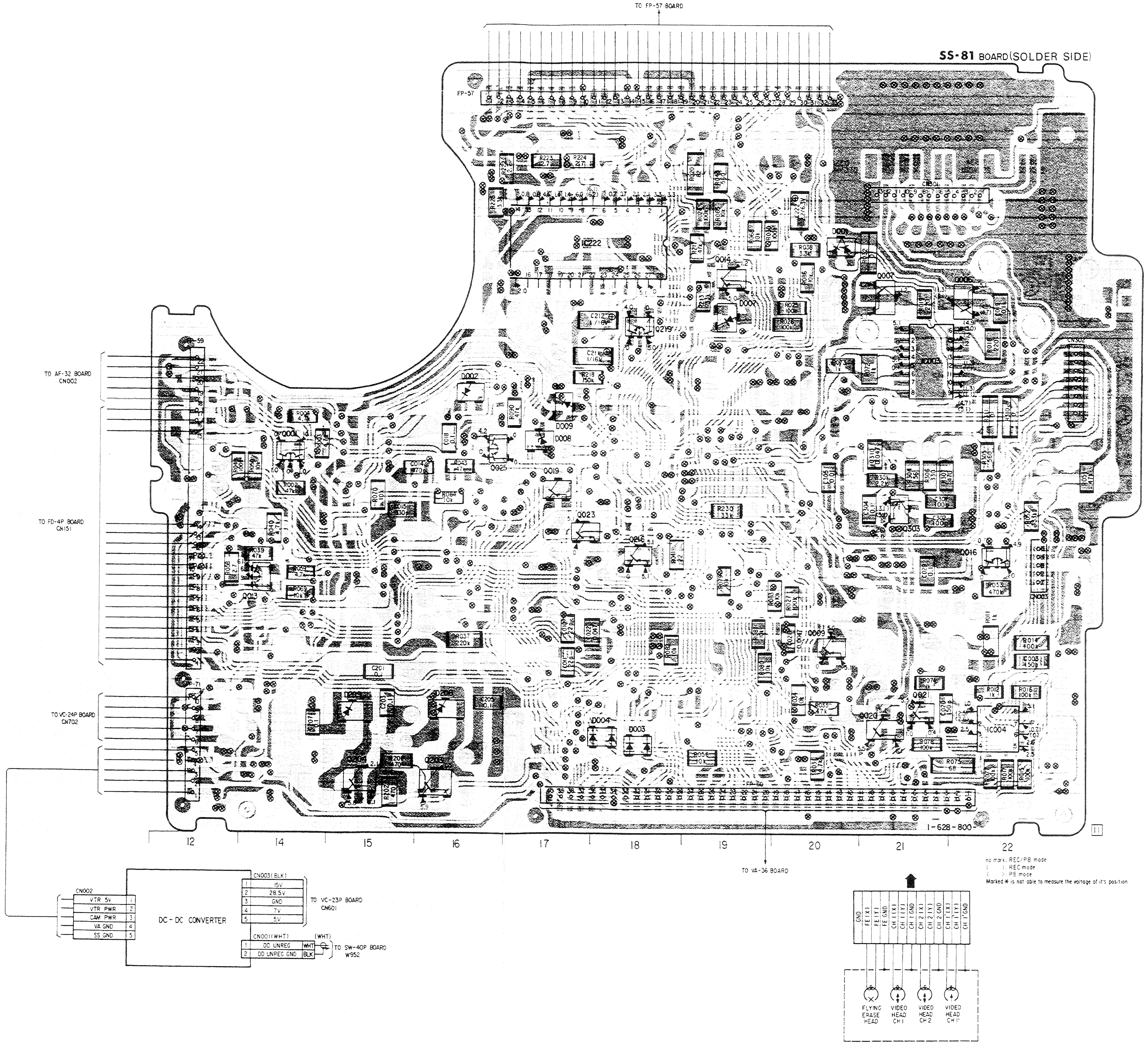

TO AF-32 BOARD CN002
TO FD-4P BOARD CN151
TO VC-24P BOARD CN702
CN002
VTR 5V
VTR PWR
CAM PWR
VA GND
SS GND
1
2
3
4
5

SWITCH), FP-53(T/S REEL SENSOR), FP-57(BATTERY HOLDER/RELAY), FP-70P(BATTERY TERMINAL) PRINTED WIRING BOARDS

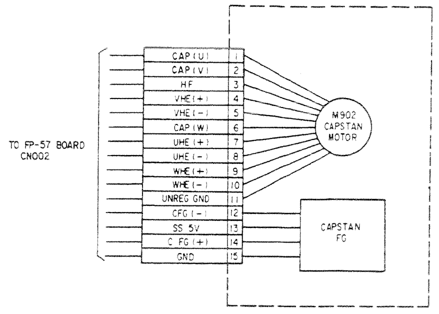
series, CC-7 BOARD : 5, 000 series, FP-57 BOARD : 6, 000 series—

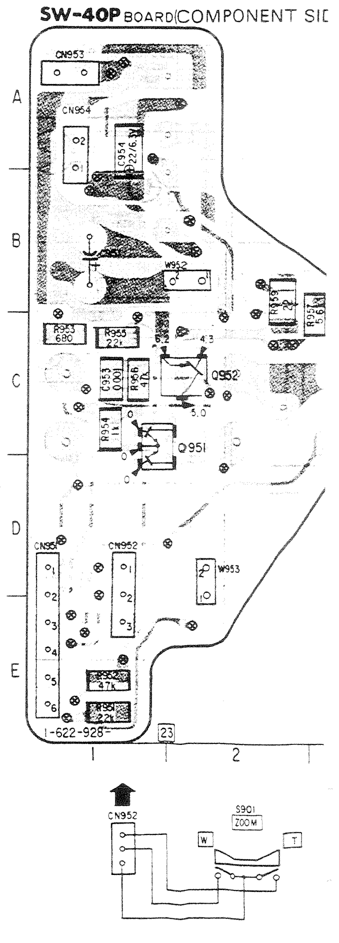

TP010
TP002
TP004
TP005
IC002
R226
Q024
Q002
Q015
Q012
Q010
Q016
Q001
D005
RV002
C204
C206
C207
L206
L207
623-800-
11
8
9
10
11

no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
Marked ✱ is not able to measure the voltage of it's position.


TO FP-57 BOARD
SS-81 BOARD(SOLDER SIDE)
FP-57
IC222
IC001
IC003
IC004
CN001
Q014
Q219
Q007
Q006
Q001
Q025
Q019
Q023
Q018
Q016
Q009
Q013
Q020
Q021
D002
D003
D004
D007
D008
D009
TO AF-32 BOARD CN002
TO FD-4P BOARD CN151
TO VC-24P BOARD CN702
1-628-800-
11
12
14
15
16
17
18
19
20
21
22
TO VA-36 BOARD
CN002
VTR 5V
VTR PWR
CAM PWR
VA GND
SS GND
DC - DC CONVERTER
CN003(BLK)
15V
28.5V
GND
7V
5V
TO VC-23P BOARD CN601
CN001(WHT)
DD UNREG
DD UNREG GND
WHT
BLK
(WHT)
TO SW-40P BOARD W952
GND
FE(X)
FE(Y)
FE GND
CH 1(X)
CH 1(Y)
CH 1 GND
CH 2(X)
CH 2(Y)
CH 2 GND
CH 1'(X)
CH 1'(Y)
CH 1'GND
FLYING ERASE HEAD
VIDEO HEAD CH1
VIDEO HEAD CH2
VIDEO HEAD CH1'

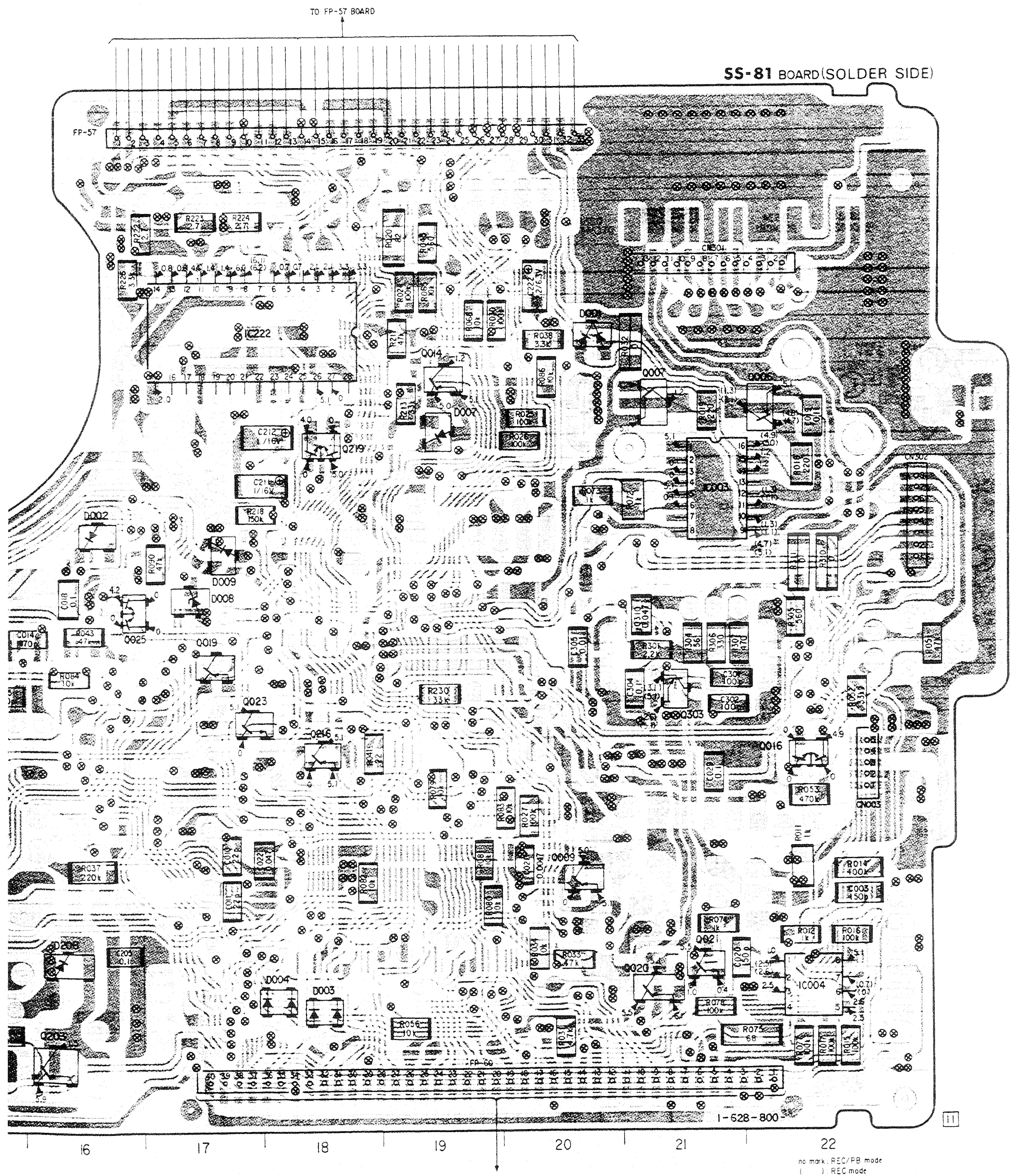
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
Marked ✱ is not able to measure the voltage of it's position


TO FP-57 BOARD CN002
CAP(U) 1
CAP(V) 2
HF 3
VHE(+) 4
VHE(-) 5
CAP(W) 6
UHE(+) 7
UHE(-) 8
WHE(+) 9
WHE(-) 10
UNREG GND 11
CFG(-) 12
SS 5V 13
C FG(+) 14
GND 15
M902 CAPSTAN MOTOR
CAPSTAN FG

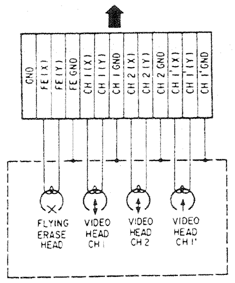

SW-40P BOARD(COMPONENT SID
CN953
CN954
CN951
CN952
W952
W953
Q952
Q951
A
B
C
D
E
1-622-928-
23
1
2
S901
ZOOM
W
T

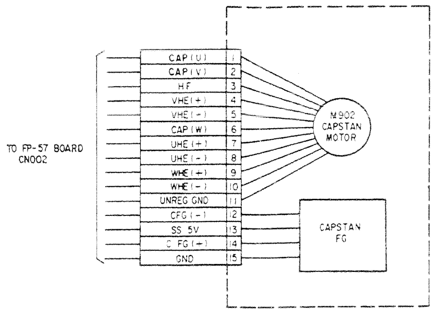
OARDS

SS-81 BOARD(SOLDER SIDE)

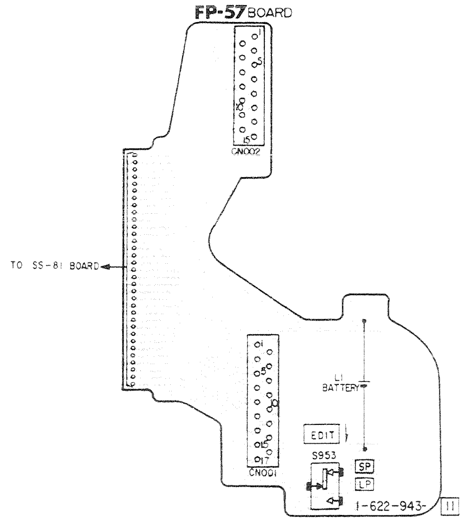

TO FP-57 BOARD
FP-57
IC222
IC003
IC004
Q014
Q019
Q023
Q025
Q016
Q020
Q021
Q219
D002
D003
D004
D006
D007
D008
D009
FP-56
1-628-800
11
16
17
18
19
20
21
22
TO VA-36 BOARD

no mark: REC/PB mode
( ): REC mode
⟨ ⟩: PB mode
Marked ✱ is not able to measure the voltage of it's position

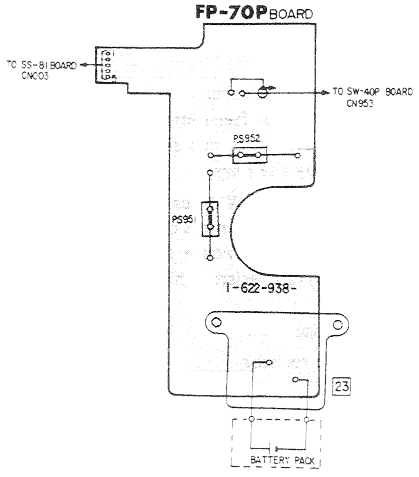

GND
FE(X)
FE(Y)
FE GND
CH 1(X)
CH 1(Y)
CH 1 GND
CH 2(X)
CH 2(Y)
CH 2 GND
CH 1'(X)
CH 1'(Y)
CH 1'GND
FLYING ERASE HEAD
VIDEO HEAD CH 1
VIDEO HEAD CH 2
VIDEO HEAD CH 1'


TO FP-57 BOARD CN002
CAP(U) 1
CAP(V) 2
HF 3
VHE(+) 4
VHE(−) 5
CAP(W) 6
UHE(+) 7
UHE(−) 8
WHE(+) 9
WHE(−) 10
UNREG GND 11
CFG(−) 12
SS 5V 13
C FG(+) 14
GND 15
M902 CAPSTAN MOTOR
CAPSTAN FG

FP-57 BOARD

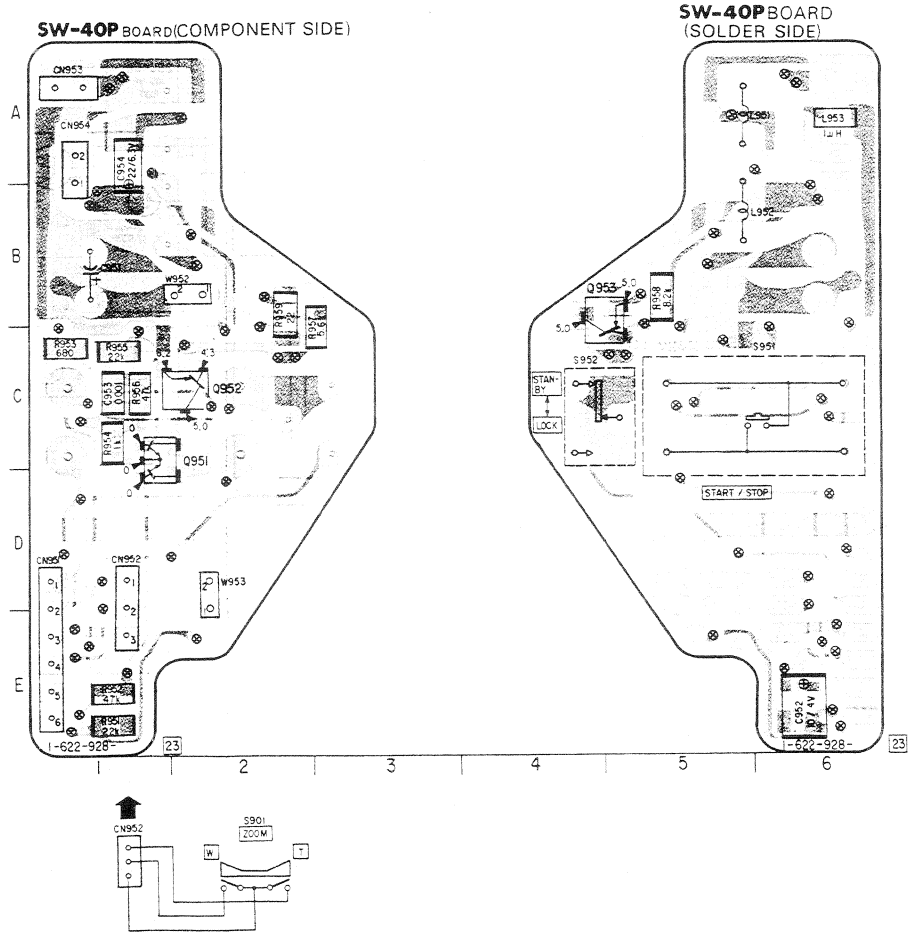

CN002
TO SS-81 BOARD
CN001
L1 BATTERY
EDIT
S953
SP
LP
1-622-943-
11

FP-70P BOARD

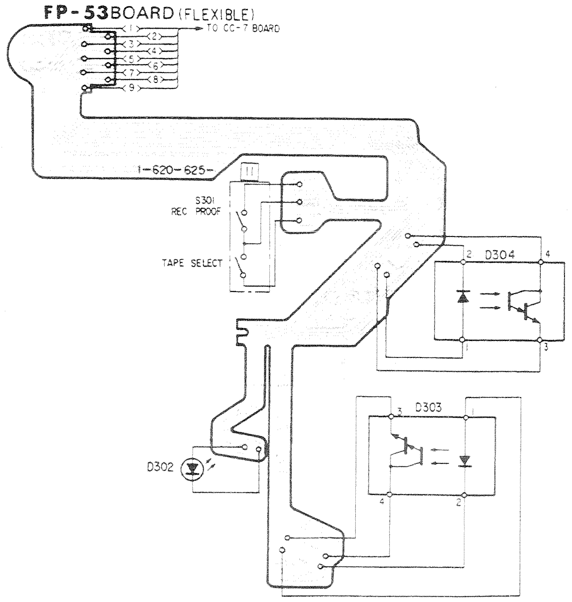

TO SS-81 BOARD CN003
TO SW-40P BOARD CN953
PS952
PS951
1-622-938-
23
BATTERY PACK

SW-40P BOARD(COMPONENT SIDE)

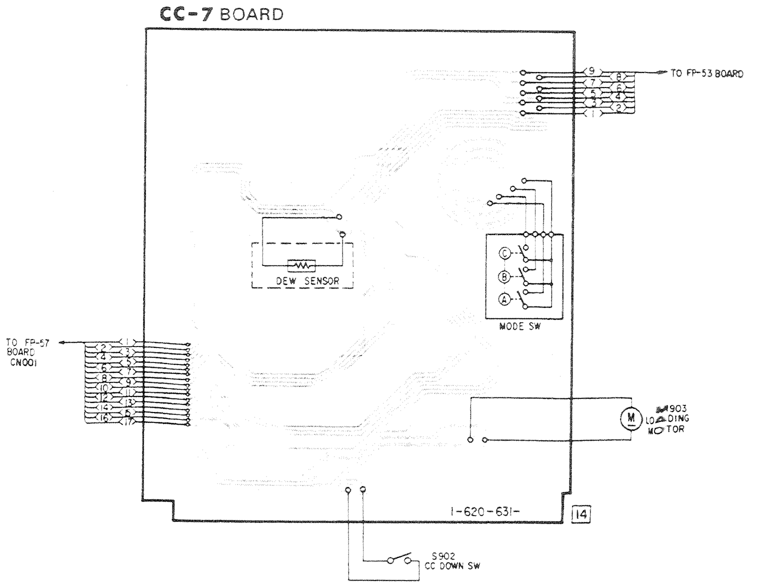
SW-40P BOARD (SOLDER SIDE)


CN953
CN954
R954 22k
W952
Q952
Q951
R953 68k
R955 22k
R956 47k
C953 0.001
CN951
CN952
W953
R952 47k
R951 22k
1-622-928-
23
A
B
C
D
E
1
2
3
4
5
6
S951
S953
L951
L952
Q953
R958
S952
STANDBY
LOCK
START / STOP
C952 10 / 4V
1-622-928-
23
CN952
S901
ZOOM
W
T

FP-53 BOARD (FLEXIBLE)


TO CC-7 BOARD
1-620-625-
11
S301 REC PROOF
TAPE SELECT
D304
D303
D302

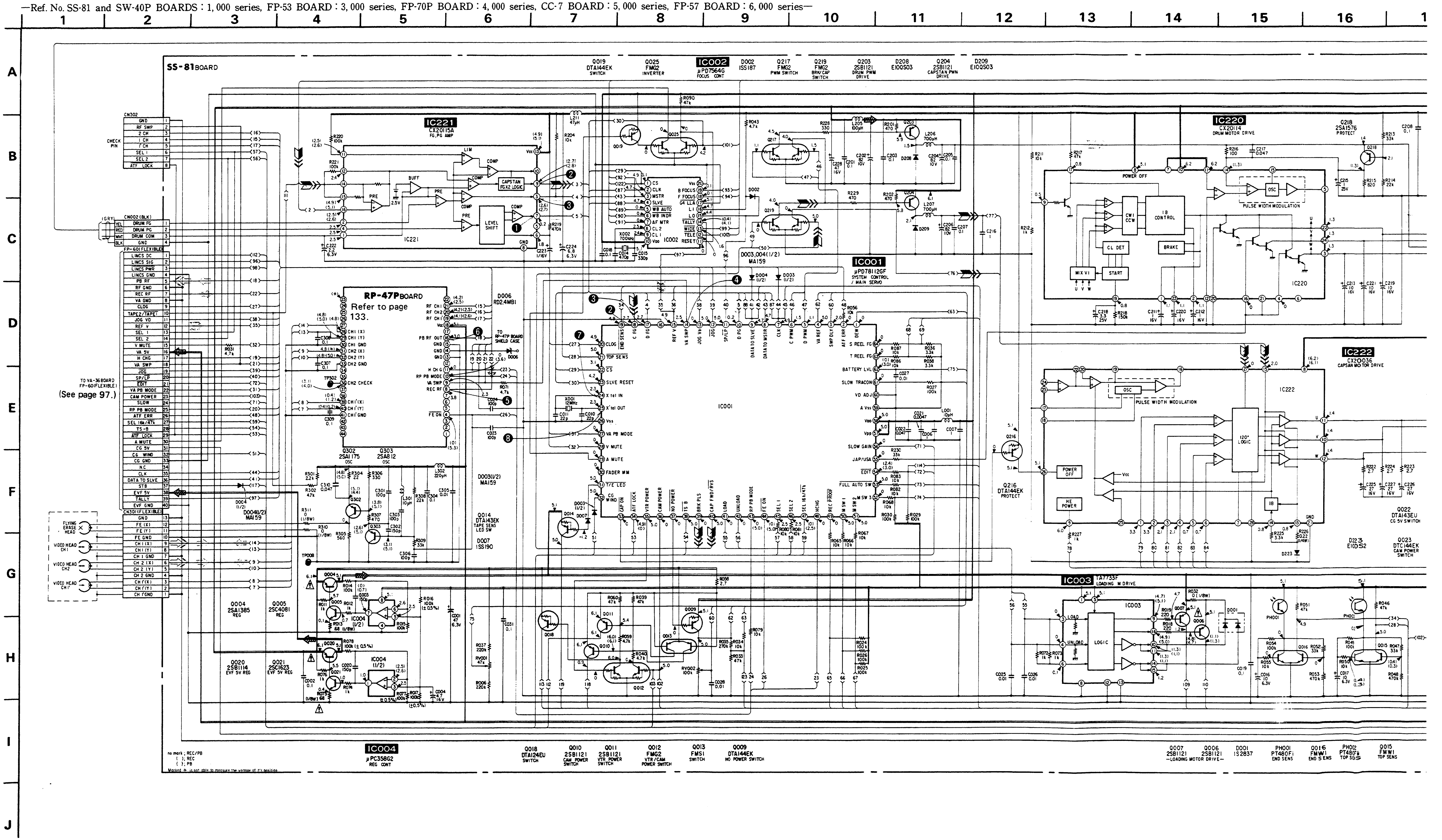
CC-7 BOARD


TO FP-53 BOARD
DEW SENSOR
MODE SW
TO FP-57 BOARD CN001
M903 LOADING MOTOR
1-620-631-
14
S902 CC DOWN SW

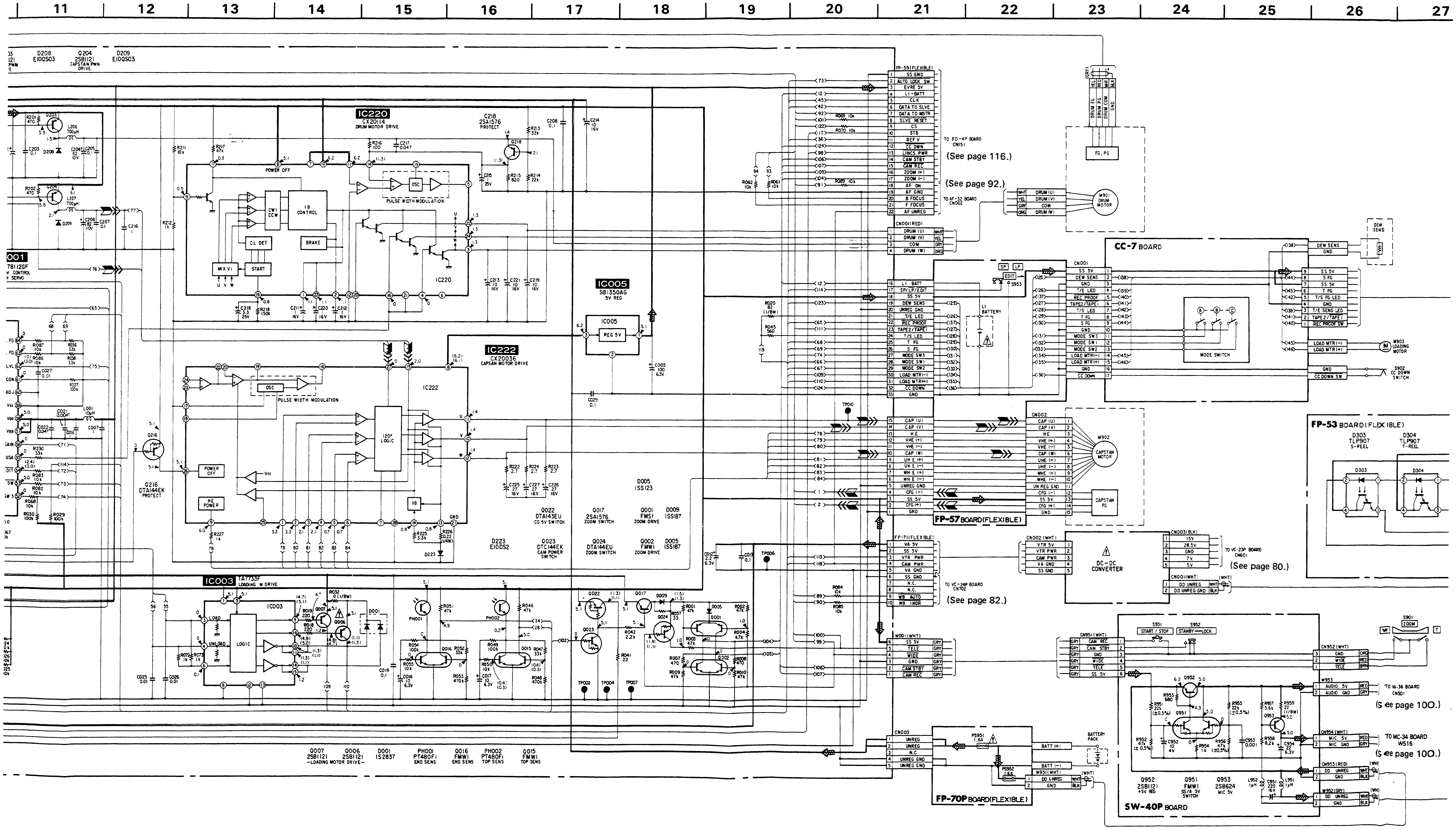
VIDEO(2)/SERVO/SYSTEM CONTROL   VIDEO(2)/SERVO/SYSTEM CONTROL

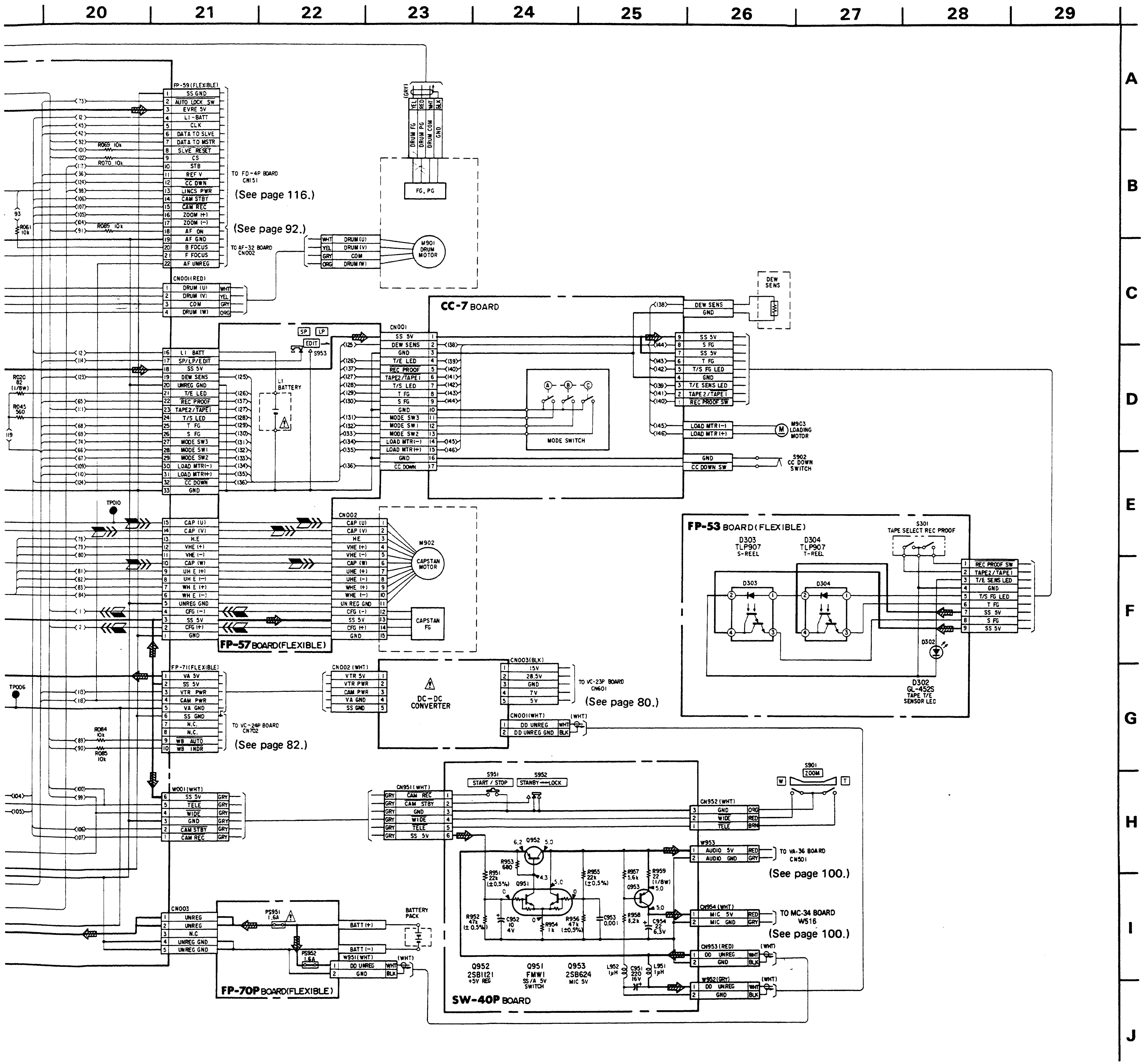
SS-81(SERVO, SYSTEM CONTROL, REC/PB AMP), SW-40P(CAMERA SWITCH), CC-7(MODE SWITCH), FP-53(T/S REEL SENSOR), FP-57(BATTERY HOLDER/RELAY), FP-70P(BATTERY TERMINAL) SCHEMATIC DIAGRAM

—Ref. No. SS-81 and SW-40P BOARDS : 1, 000 series, FP-53 BOARD : 3, 000 series, FP-70P BOARD : 4, 000 series, CC-7 BOARD : 5, 000 series, FP-57 BOARD : 6, 000 series—


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
SS-81BOARD
Q019
DTA144EK
SWITCH
Q025
FMG2
INVERTER
IC002
μPD7564G
FOCUS CONT
D002
ISS187
Q217
FMG2
PWM SWITCH
Q219
FMG2
BRK/CAP SWITCH
Q203
2SB1121
DRUM PWM DRIVE
D208
E10QS03
Q204
2SB1121
CAPSTAN PWN DRIVE
D209
E10QS03
IC221
CX20115A
FG,PG AMP
IC220
CX20114
DRUM MOTOR DRIVE
Q218
2SA1576
PROTECT
CN302
CHECK PIN
CN002 (BLK)
FP-601 FLEXIBLE
CN301 (FLEXIBLE)
TO VA-36 BOARD FP-60 (FLEXIBLE)
(See page 97.)
FLYING ERASE HEAD
VIDEO HEAD CH1
VIDEO HEAD CH2
VIDEO HEAD CH1'
RP-47PBOARD
Refer to page 133.
IC001
μPD78112GF
SYSTEM CONTROL / MAIN SERVO
IC222
CX20036
CAPSAN MOTOR DRIVE
PULSE WIDTH MODULATION
120° LOGIC
POWER OFF
HE POWER
Q216
DTA144EK
PROTECT
Q022
DTA143EU
CG 5V SWITCH
D223
E10S2
Q023
DTC144EK
CAM POWER SWITCH
Q302
2SA1175
OSC
Q303
2SA812
OSC
D003(1/2)
MA159
Q014
DTA143EK
TAPE SENS LED SW
D007
1SS190
D004 (1/2)
D004(1/2)
MA159
D006
RD2.4MB1
IC003
TA7733F
LOADING M DRIVE
Q004
2SA1385
REG
Q005
2SC4081
REG
Q020
2SB1114
EVF 5V REG
Q021
2SC1623
EVF 5V REG
IC004 (1/2)
no mark ; REC/PB
( ); REC
( ); PB
Marked ✱ is not able to measure the voltage of it's position
IC004
μPC358G2
REG CONT
Q018
DTA124EU
SWITCH
Q010
2SB1121
CAM POWER SWITCH
Q011
2SB1121
VTR POWER SWITCH
Q012
FMG2
VTR/CAM POWER SWITCH
Q013
FMS1
SWITCH
Q009
DTA144EK
NO POWER SWITCH
Q007
2SB1121
Q006
2SB1121
—LOADING MOTOR DRIVE—
D001
1S2837
PH001
PT480Fi
END SENS
Q016
FMW1
END SENS
PH002
PT480F
TOP SENS
Q015
FMW1
TOP SENS

LAY), FP-70P(BATTERY TERMINAL) SCHEMATIC DIAGRAM


11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
IC220
CX20114
DRUM MOTOR DRIVE
PULSE WIDTH MODULATION
IC222
CX20036
CAPSAN MOTOR DRIVE
IC005
S81350AG
5V REG
IC003
TA7733F
LOADING M DRIVE
Q216
DTA144EK
PROTECT
C218
2SA1576
PROTECT
FP-59 (FLEXIBLE)
TO FD-4P BOARD CN151
(See page 116.)
(See page 92.)
TO AF-32 BOARD CN002
M901 DRUM MOTOR
CC-7 BOARD
MODE SWITCH
M903 LOADING MOTOR
S902 CC DOWN SWITCH
DEW SENS
M902 CAPSTAN MOTOR
CAPSTAN FG
FP-57 BOARD (FLEXIBLE)
FP-53 BOARD (FLEXIBLE)
D303 TLP907 S-REEL
D304 TLP907 T-REEL
FP-71 (FLEXIBLE)
TO VC-24P BOARD CN702
(See page 82.)
DC-DC CONVERTER
TO VC-23P BOARD CN601
(See page 80.)
L1 BATTERY
S953
FP-70P BOARD (FLEXIBLE)
BATTERY PACK
PS951 1.6A
PS952 1.6A
SW-40P BOARD
S951 START / STOP
S952 STANBY—LOCK
S901 ZOOM
TO VA-36 BOARD CN501
(See page 100.)
TO MC-34 BOARD W516
(See page 100.)
Q952 2SB1121 +5V REG
Q951 FMW1 SS/A 5V SWITCH
Q953 2SB624 MIC 5V
Q007 2SB1121
Q006 2SB1121
—LOADING MOTOR DRIVE—
D001 1S2837
PH001 PT480Fi END SENS
Q016 FMW1 END SENS
PH002 PT480Fi TOP SENS
Q015 FMW1 TOP SENS
Q022 DTA143EU CG 5V SWITCH
Q017 2SA1576 ZOOM SWITCH
Q001 FMS1 ZOOM DRIVE
D009 1SS187
D005 1SS123
D223 E10DS2
Q023 DTC144EK CAM POWER SWITCH
Q024 DTA144EU ZOOM SWITCH
Q002 FMW1 ZOOM DRIVE
D005 1SS187
D208 E10QS03
Q204 2SB1121 CAPSTAN PWM DRIVE
D209 E10QS03
TP010
TP006
TP002
TP004
TP007


20
21
22
23
24
25
26
27
28
29
A
B
C
D
E
F
G
H
I
J
FP-59 (FLEXIBLE)
TO FD-4P BOARD CN151
(See page 116.)
(See page 92.)
TO AF-32 BOARD CN002
M901 DRUM MOTOR
FG, PG
CC-7 BOARD
DEW SENS
MODE SWITCH
M903 LOADING MOTOR
S902 CC DOWN SWITCH
M902 CAPSTAN MOTOR
CAPSTAN FG
FP-57 BOARD (FLEXIBLE)
FP-53 BOARD (FLEXIBLE)
D303 TLP907 S-REEL
D304 TLP907 T-REEL
S301 TAPE SELECT REC PROOF
D302 GL-452S TAPE T/E SENSOR LED
FP-71 (FLEXIBLE)
TO VC-24P BOARD CN702
(See page 82.)
DC-DC CONVERTER
TO VC-23P BOARD CN601
(See page 80.)
S951 START/STOP
S952 STANBY—LOCK
S901 ZOOM
TO VA-36 BOARD CN501
(See page 100.)
TO MC-34 BOARD W516
(See page 100.)
CN003
PS951 1.6A
PS952 1.6A
BATTERY PACK
Q952 2SB1121 +5V REG
Q951 FMW1 SS/A 5V SWITCH
Q953 2SB624 MIC 5V
FP-70P BOARD (FLEXIBLE)
SW-40P BOARD

Note:

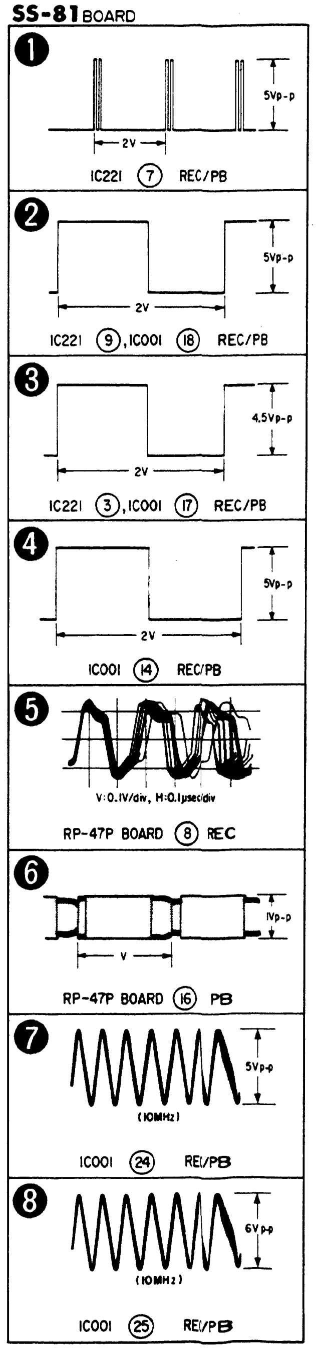
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/6W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- fusible resistor.
- nonflammable resistor.
- △ : internal component.
- ⇨ : IN/OUT direction of B+, B− bus.
- ▬ : B + bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

- **Signal path**
  - ⇨ : REC Y/CHROMA Signal
  - ⇨ : PB Y/CHROMA Signal
  - ⇨ : REC AUDIO Signal
  - ⇨ : PB AUDIO Signal

	REC	REC/PB	PB
Drum speed servo		⇨	
Drum phase servo		⇨›	
Drum servo (speed and phase)		⇨››	
Capstan speed servo		➡	
Capstan phase servo	➡›		⇨›
Capstan servo (speed and phase)		➡››	
Ref. signal	⇨	⇨	⇨

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SS-81 BOARD



FD-4P(MODE CONTROL, CONTROL SWITCH), FK-4P(POWER/VTR FUNCTION SWITCH) PRINTED WIRING BOARDS

—Ref. No. FD-4P BOARD : 1, 000 series, FK-4P BOARD : 4, 000 series—

Note:

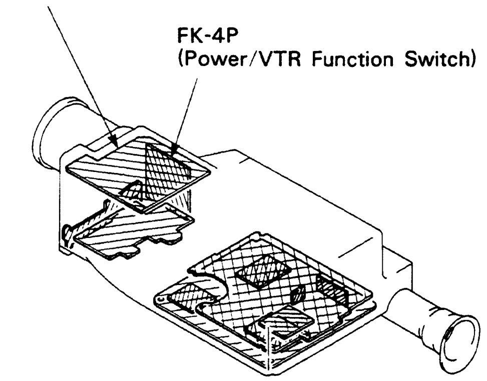
- ⊗ : Through hole.
- ● : Pattern from the side which enables seeing.
- ○ : Pattern of the rear side.
- Digital transistor (FD-4P board: Q162, Q163): transistor with resistor.
  Refer to the FD-4P board schematic diagram for digital transistor.

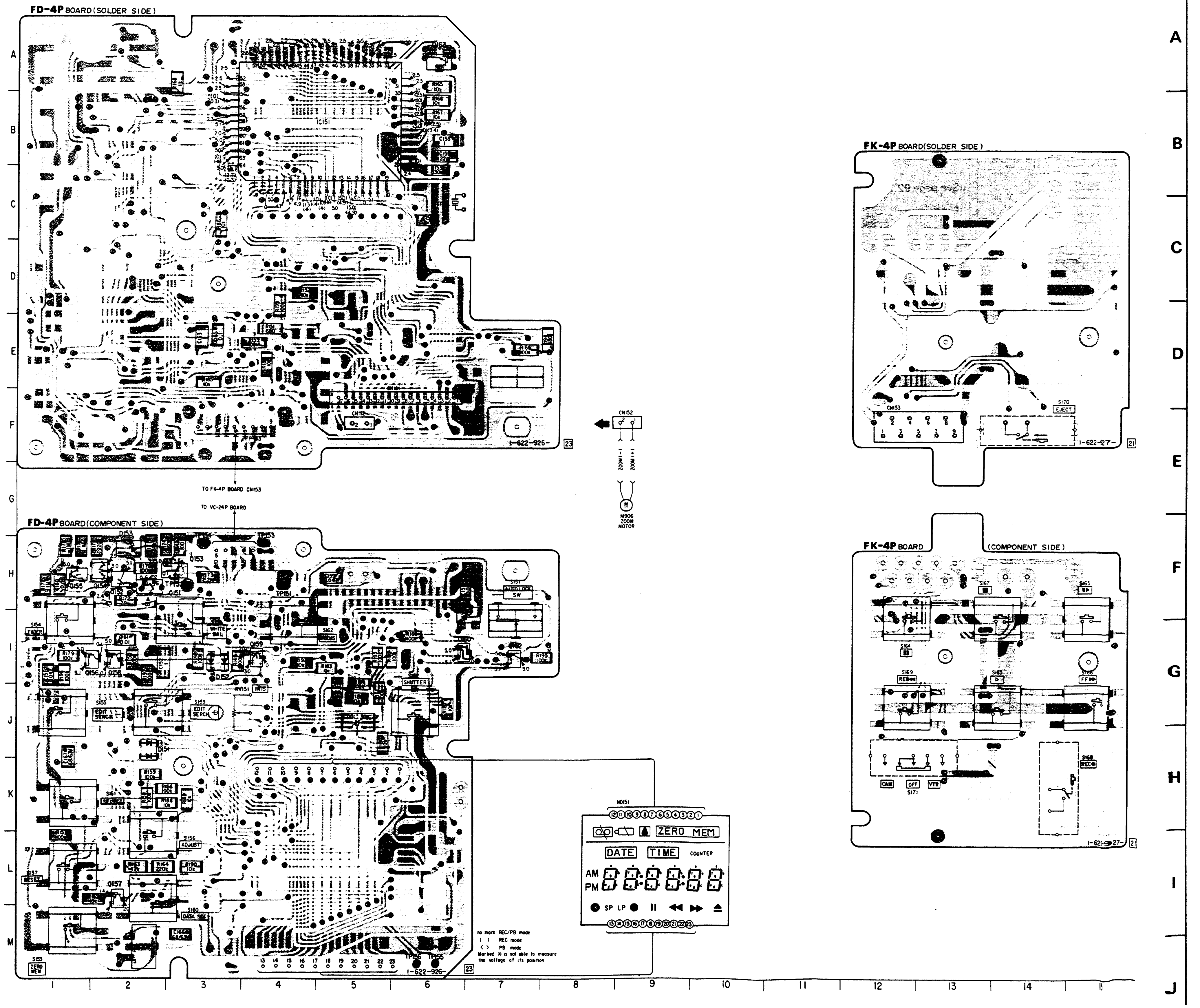
Caution:

Pattern face side: (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

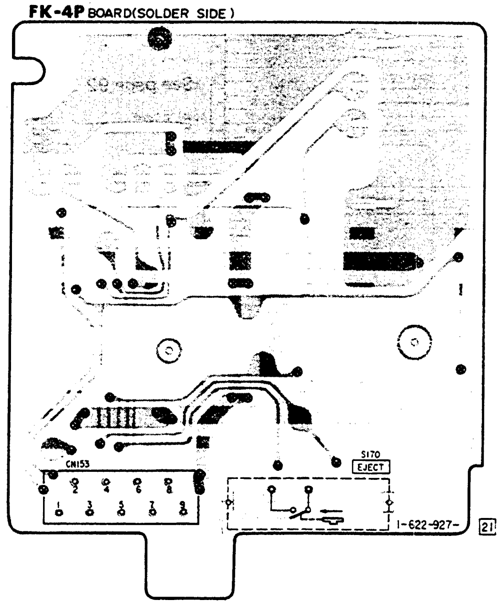
When indicating parts by reference number, please include the board name.

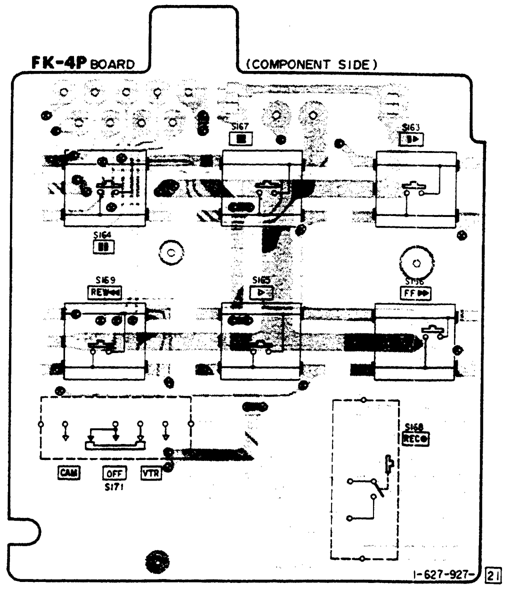
CN151	F-5
CN152	F-5
D151	J-2
D152	I-3
D153	H-2
D155	I-6
FP-63	F-3
FP-57	H-3
IC151	B-4
IC152	M-2
Q151	H-2
Q152	H-2
Q153	H-3
Q154	H-2
Q155	H-1
Q156	I-2
Q157	L-2
Q158	I-2
Q159	I-4
Q160	I-6
Q162	I-7
Q163	A-6

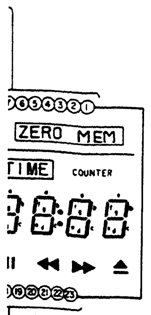

FD-4P
(Mode Control, Control Switch)
FK-4P
(Power/VTR Function Switch)


FD-4P BOARD (SOLDER SIDE)
FD-4P BOARD (COMPONENT SIDE)
FK-4P BOARD (SOLDER SIDE)
FK-4P BOARD (COMPONENT SIDE)
IC151
CN152
TO FK-4P BOARD CN153
TO VC-24P BOARD
ZOOM(-)
ZOOM(+)
M906
ZOOM
MOTOR
1-622-926-
23
CN153
S170 EJECT
1-622-927-
21
S151 AUTO LOCK SW
S154 FADER
S155 EDIT SEARCH
S159 EDIT SEARCH
S161
S156 ADJUST
S157 RESET
S160 DATA SEE
S153 ZERO MEM
SHUTTER
WHITE BAL
S167
S163
S164
S165
S166
S169 REW
S168 REC
CAM OFF VTR
S171
ND151
ZERO MEM
DATE
TIME
COUNTER
AM
PM
SP LP
A
B
C
D
E
F
G
H
I
J
K
L
M
1
2
3
4
5
6
7
8
9
10
11
12
13
14

no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Marked ✳ is not able to measure the voltage of its position.

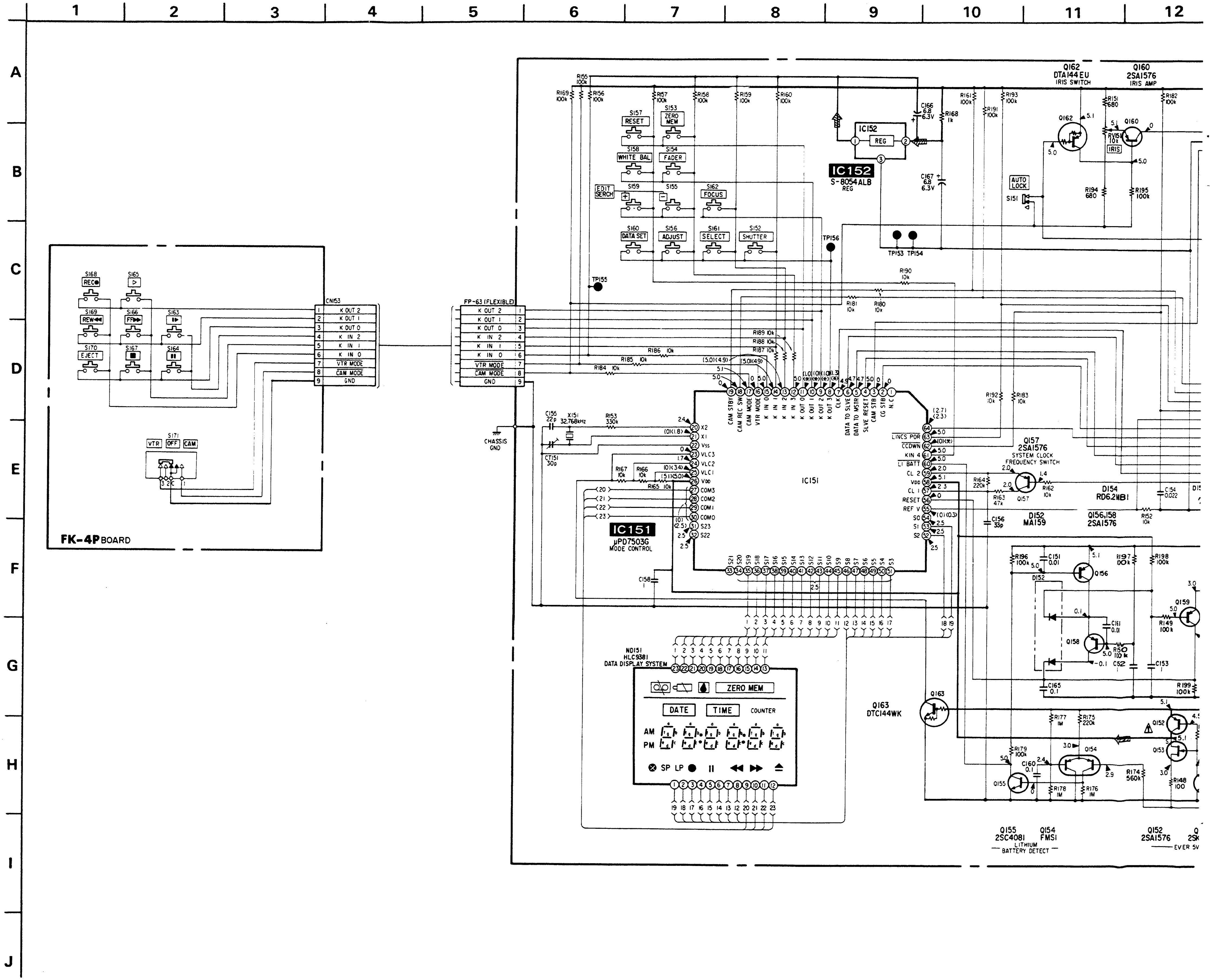

FK-4P BOARD(SOLDER SIDE)
CN153
S170
EJECT
1-622-927-
21


FK-4P BOARD
(COMPONENT SIDE)
S167
S163
S164
S169
REW◀◀
S165
S166
FF▶▶
S168
REC●
CAM
OFF
VTR
S171
1-627-927-
21


ZERO MEM
TIME
COUNTER

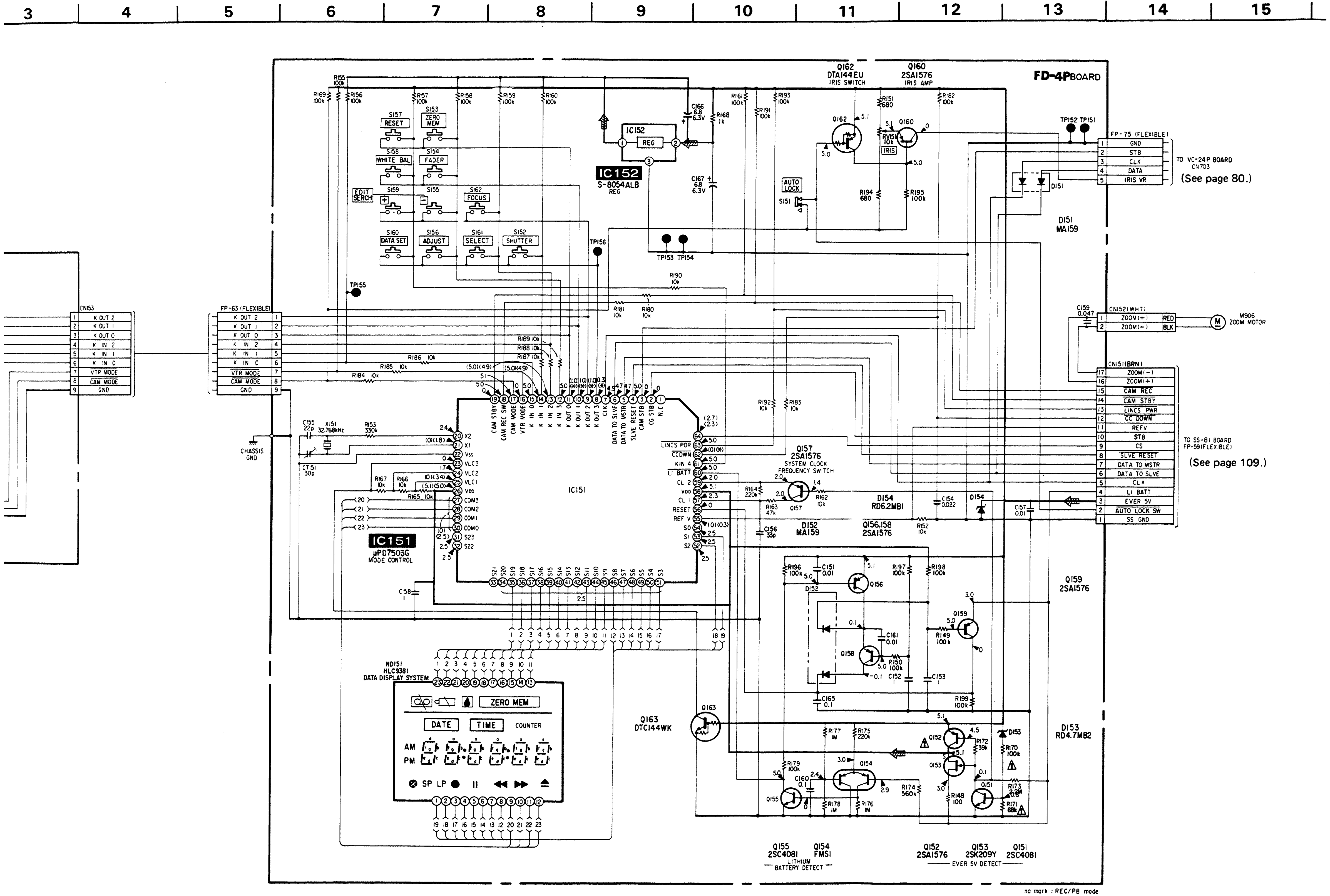
FD-4P(MODE CONTROL, CONTROL SWITCH), FK-4P(POWER/VTR FUNCTION SWITCH) SCHEMATIC DIAGRAM

—Ref. No. FD-4P BOARD : 1,000 series, FK-4P BOARD : 4,000 series—


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
FK-4P BOARD
S168 REC●
S165 ▷
S169 REW◀◀
S166 FF▶▶
S163 II▶
S170 EJECT
S167 ■
S164 II
S171 VTR OFF CAM
CN153
K OUT 2
K OUT 1
K OUT 0
K IN 2
K IN 1
K IN 0
VTR MODE
CAM MODE
GND
FP-63 (FLEXIBLE)
CHASSIS GND
S157 RESET
S153 ZERO MEM
S158 WHITE BAL
S154 FADER
EDIT SERCH
S159 +
S155 −
S162 FOCUS
S160 DATA SET
S156 ADJUST
S161 SELECT
S152 SHUTTER
TP155
TP156
TP153
TP154
IC152
S-8054ALB
REG
C166 6.8 6.3V
C167 6.8 6.3V
Q162
DTA144EU
IRIS SWITCH
Q160
2SA1576
IRIS AMP
RV151 10k IRIS
AUTO LOCK
S151
X151 32.768kHz
IC151
µPD7503G
MODE CONTROL
CAM STBY
CAM REC SW
CAM MODE
VTR MODE
K IN 0
K IN 1
K IN 2
K OUT 0
K OUT 1
K OUT 2
K OUT 3
CLK
DATA TO SLVE
DATA TO MSTR
SLVE RESET
CAM STB
CG STB
N.C
X2
X1
VSS
VLC3
VLC2
VLC1
VDD
COM3
COM2
COM1
COM0
S23
S22
LINCS POR
CCDWN
KIN 4
LI BATT
CL 2
VDD
CL 1
RESET
REF V
S0
S1
S2
Q157
2SA1576
SYSTEM CLOCK
FREQUENCY SWITCH
D154
RD6.2MB1
D152
MA159
Q156,158
2SA1576
Q159
Q163
DTC144WK
ND151
HLC5381
DATA DISPLAY SYSTEM
ZERO MEM
DATE
TIME
COUNTER
AM
PM
SP LP ●
II
◀◀ ▶▶ ⏏
Q155
2SC4081
Q154
FMS1
LITHIUM
BATTERY DETECT
Q152
2SA1576
EVER 5V

SWITCH), FK-4P(POWER/VTR FUNCTION SWITCH) SCHEMATIC DIAGRAM

'K-4P BOARD : 4,000 series—


3
4
5
6
7
8
9
10
11
12
13
14
15
FD-4P BOARD
IC151
μPD7503G
MODE CONTROL
IC152
S-8054ALB
REG
Q162
DTA144EU
IRIS SWITCH
Q160
2SA1576
IRIS AMP
S157 RESET
S153 ZERO MEM
S158 WHITE BAL
S154 FADER
S159 EDIT SERCH
S155
S162 FOCUS
S160 DATA SET
S156 ADJUST
S161 SELECT
S152 SHUTTER
S151 AUTO LOCK
RV151 10k IRIS
TP156
TP155
TP153 TP154
TP152 TP151
D151 MA159
FP-75 (FLEXIBLE)
GND
STB
CLK
DATA
IRIS VR
TO VC-24P BOARD CN703
(See page 80.)
CN152(WHT)
ZOOM(+) RED
ZOOM(−) BLK
M906 ZOOM MOTOR
CN151(BRN)
ZOOM(−)
ZOOM(+)
CAM REC
CAM STBY
LINCS PWR
CC DOWN
REFV
STB
CS
SLVE RESET
CLK
DATA TO MSTR
DATA TO SLVE
LI BATT
EVER 5V
AUTO LOCK SW
SS GND
TO SS-81 BOARD FP-59(FLEXIBLE)
(See page 109.)
CN153
K OUT 2
K OUT 1
K OUT 0
K IN 2
K IN 1
K IN 0
VTR MODE
CAM MODE
GND
FP-63 (FLEXIBLE)
CHASSIS GND
X151 32.768kHz
CT151 30p
Q157
2SA1576
SYSTEM CLOCK
FREQUENCY SWITCH
D154
RD6.2MB1
D152
MA159
Q156,158
2SA1576
Q159
2SA1576
Q163
DTC144WK
D153
RD4.7MB2
ND151
HLC8381
DATA DISPLAY SYSTEM
ZERO MEM
DATE
TIME
COUNTER
AM
PM
SP LP
Q155 2SC4081
Q154 FMS1
LITHIUM BATTERY DETECT
Q152 2SA1576
Q153 2SK209Y
Q151 2SC4081
EVER 5V DETECT

no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
Marked ✱ is not able to measure the voltage of its position.

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▭ : Nonflammable resistor
- ─── : B+ bus.
- ⇨ : IN/OUT direction of B+, B− bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

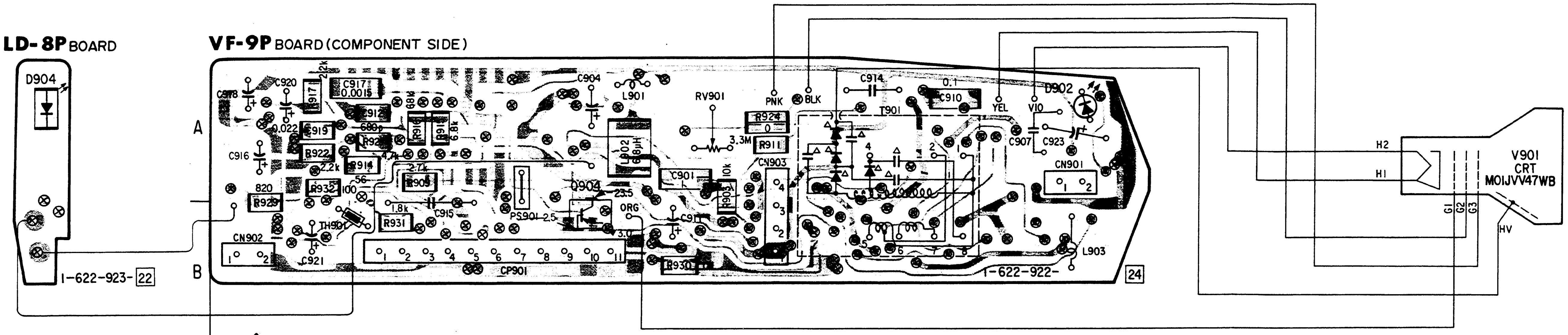
When indicating parts by reference number, please include the board name.

VF-9P(VIEWFINDER), LD-8P(LED) PRINTED WIRING BOARDS

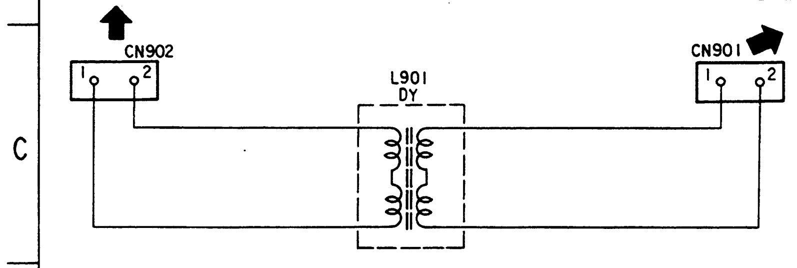
—Ref. No. VF-9P BOARD : 2, 000 series, LD-8P BOARD : 3, 000 series—

LD-8P BOARD

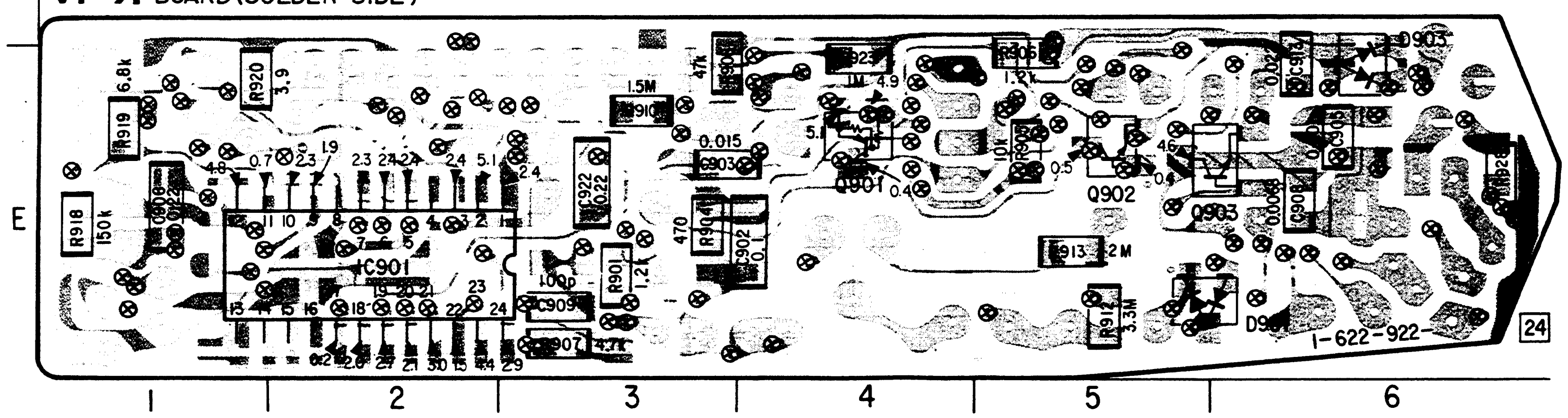
VF-9P BOARD (COMPONENT SIDE)


D904
1-622-923- 22
A
B
C918
C920
C917 0.0015
C912
C919
0.022
R922
C916
R914
2.2k
R932
100
56
820
R929
CN902
C921
TH901
R931
1.8k
C915
R909
2.7k
PS901
Q904
CP901
C904
L901
L902 68μH
C901
RV901
3.3M
R924
R911
CN903
PNK
BLK
ORG
R930
C914
T901
0.1
C910
YEL
VIO
D902
C907
C923
CN901
L903
1-622-922-
24
H2
H1
V901
CRT
M01JVV47WB
G1
G2
G3
HV

CN901	A-6
CN902	B-1
CN903	A-4
CN903	A-4
CP901	B-3
D901	E-6
D902	A-6
D903	E-6
IC901	E-2
Q901	E-4
Q902	E-5
Q903	E-5
Q904	B-3
RV901	A-4


CN902
L901
DY
CN901
C
D

VF-9P BOARD (SOLDER SIDE)


R919
6.8k
R920
3.9
R918
150k
IC901
C922
0.22
R901
1.2k
1.5M
R910
0.015
C903
470
R904
C902
0.1
Q901
Q902
Q903
R913
2M
R912
3.3M
D901
D903
1-622-922-
24
E
1
2
3
4
5
6

Note:

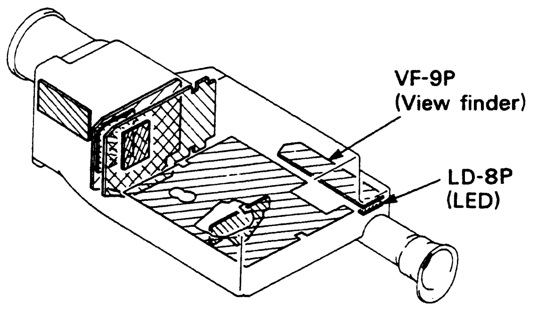
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- : Pattern of the rear side.

Caution:

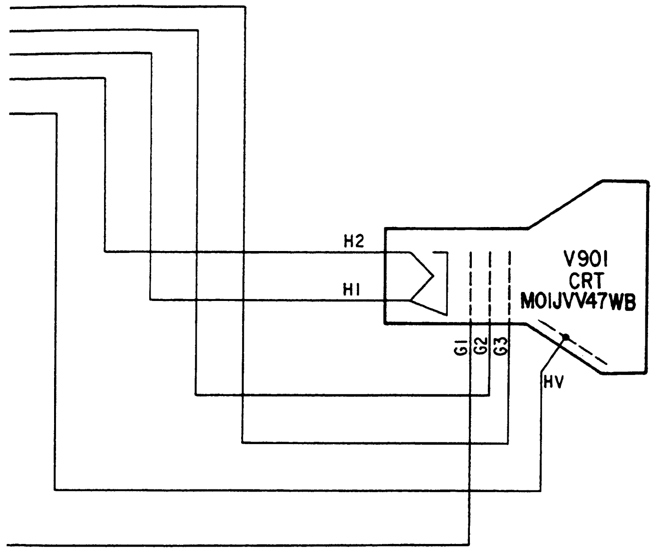
Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

When indicating parts by reference number, please include the board name.


VF-9P
(View finder)
LD-8P
(LED)

no mark: REC/PB mode

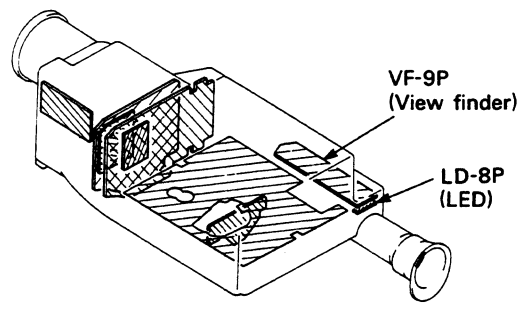

H2
H1
V901
CRT
M01JVV47WB
G1
G2
G3
HV

Note:

- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- : Pattern of the rear side.

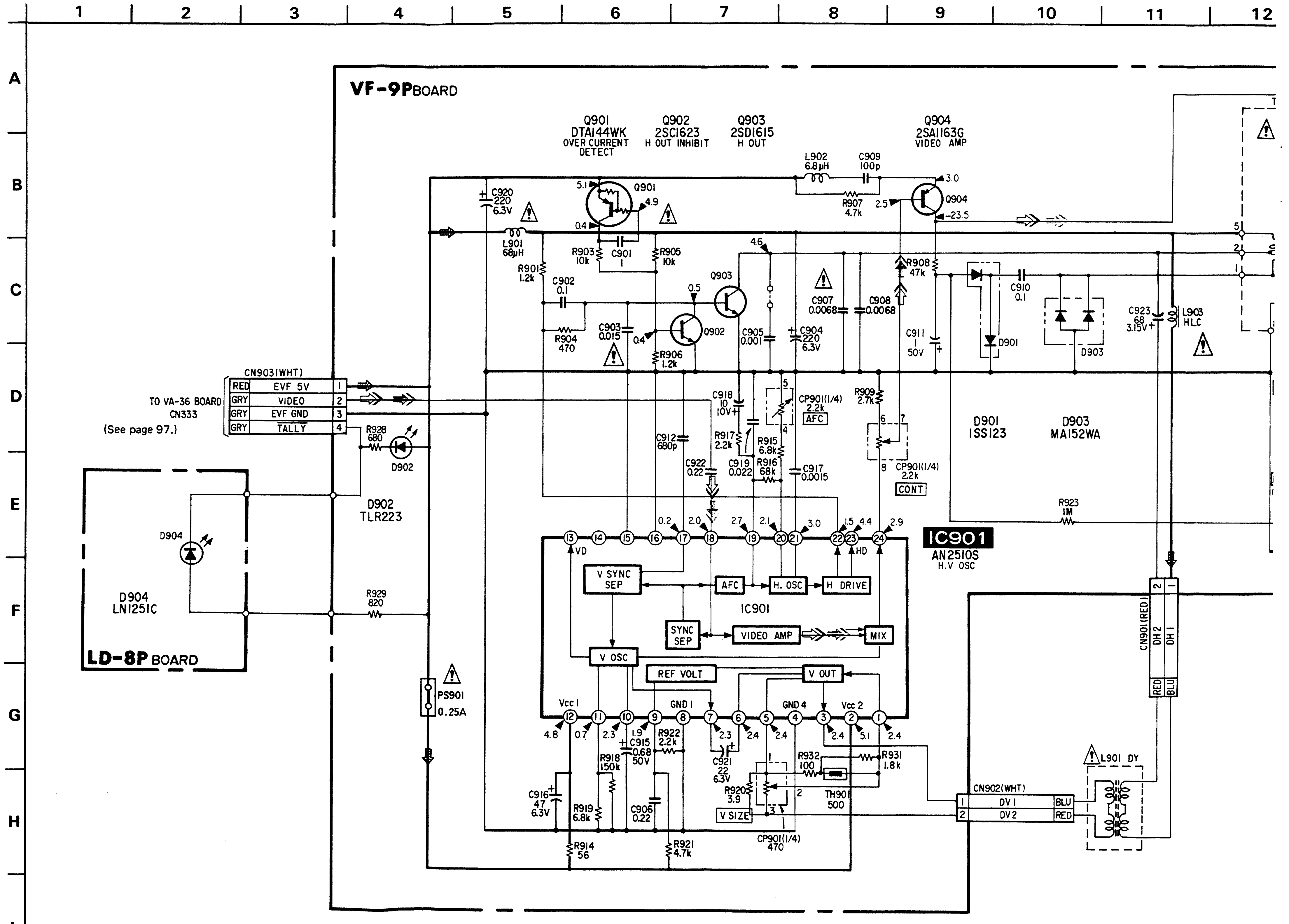
Caution:
Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

When indicating parts by reference number, please include the board name.


VF-9P
(View finder)
LD-8P
(LED)

VF-9P(VIEWFINDER), LD-8P(LED) SCHEMATIC DIAGRAM

—Ref. No. VF-9P BOARD : 2, 000 series, LD-8P BOARD : 3, 000 series—


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
VF-9P BOARD
Q901
DTA144WK
OVER CURRENT DETECT
Q902
2SC1623
H OUT INHIBIT
Q903
2SD1615
H OUT
Q904
2SA1163G
VIDEO AMP
L902
6.8μH
C909
100p
R907
4.7k
C920
220
6.3V
L901
68μH
R901
1.2k
R903
10k
C901
1
R905
10k
C902
0.1
R904
470
C903
0.015
R906
1.2k
C905
0.001
C904
220
6.3V
C907
0.0068
C908
0.0068
R908
47k
C911
1
50V
C910
0.1
D901
D903
C923
68
3.15V
L903
HLC
CN903(WHT)
RED EVF 5V 1
GRY VIDEO 2
GRY EVF GND 3
GRY TALLY 4
TO VA-36 BOARD
CN333
(See page 97.)
R928
680
D902
TLR223
R929
820
D904
LN1251C
LD-8P BOARD
C918
10
10V
CP901(1/4)
2.2k
AFC
R909
2.7k
R917
2.2k
R915
6.8k
C912
680p
C922
0.22
C919
0.022
R916
68k
C917
0.0015
CP901(1/4)
2.2k
CONT
D901
1SS123
D903
MA152WA
R923
1M
IC901
AN2510S
H.V OSC
VD
HD
V SYNC SEP
AFC
H. OSC
H DRIVE
IC901
SYNC SEP
VIDEO AMP
MIX
V OSC
REF VOLT
V OUT
Vcc1
GND1
GND4
Vcc2
PS901
0.25A
C916
47
6.3V
R918
150k
C915
0.68
50V
R922
2.2k
C921
22
6.3V
R932
100
R931
1.8k
R920
3.9
TH901
500
V SIZE
CP901(1/4)
470
R919
6.8k
C906
0.22
R914
56
R921
4.7k
CN902(WHT)
DV1 BLU
DV2 RED
L901 DY
CN901(RED)
DH2
DH1
RED
BLU
5.1
4.9
0.4
0.5
4.6
3.0
2.5
-23.5
0.2
2.0
2.7
2.1
1.5
4.4
2.9
4.8
0.7
2.3
1.9
2.4
5.1

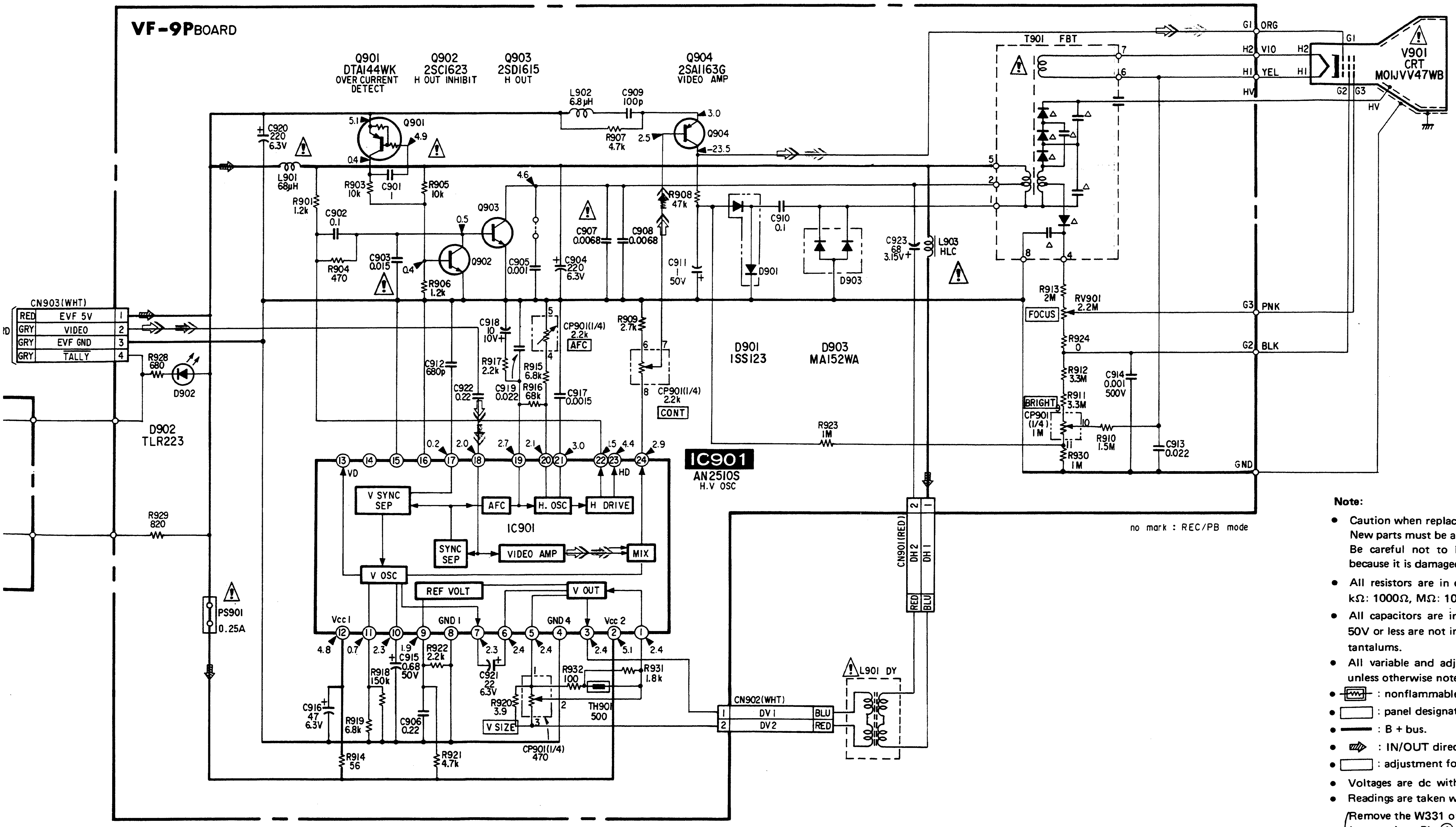
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

(LED) SCHEMATIC DIAGRAM

series, LD-8P BOARD : 3, 000 series—

3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16


VF-9P BOARD
Q901
DTA144WK
OVER CURRENT DETECT
Q902
2SC1623
H OUT INHIBIT
Q903
2SD1615
H OUT
Q904
2SA1163G
VIDEO AMP
L902 6.8μH
C909 100p
R907 4.7k
C920 220 6.3V
L901 68μH
R903 10k
C901 1
R905 10k
R901 1.2k
C902 0.1
R904 470
C903 0.015
R906 1.2k
C905 0.001
C904 220 6.3V
C907 0.0068
C908 0.0068
R908 47k
C911 1 50V
C910 0.1
D901
D903
C923 68 3.15V
L903 HLC
T901 FBT
G1 ORG
H2 VIO
H1 YEL
HV
G1
H2
H1
G2
G3
HV
V901 CRT M01JVV47WB
R913 2M
RV901 2.2M
FOCUS
R924 0
R912 3.3M
C914 0.001 500V
BRIGHT
R911 3.3M
CP901 (1/4) 1M
R910 1.5M
R930 1M
C913 0.022
G3 PNK
G2 BLK
GND
R923 1M
CN903(WHT)
RED EVF 5V 1
GRY VIDEO 2
GRY EVF GND 3
GRY TALLY 4
R928 680
D902
D902 TLR223
R929 820
PS901 0.25A
C918 10 10V
C912 680p
C922 0.22
R917 2.2k
R915 6.8k
C919 0.022
R916 68k
C917 0.0015
CP901(1/4) 2.2k
AFC
R909 2.7k
CP901(1/4) 2.2k
CONT
D901 1SS123
D903 MA152WA
IC901
AN2510S
H.V OSC
VD
HD
V SYNC SEP
AFC
H. OSC
H DRIVE
IC901
SYNC SEP
VIDEO AMP
MIX
V OSC
REF VOLT
V OUT
Vcc 1
GND 1
GND 4
Vcc 2
C916 47 6.3V
R919 6.8k
R918 150k
C915 0.68 50V
R922 2.2k
C906 0.22
C921 22 6.3V
R920 3.9
V SIZE
R932 100
R931 1.8k
TH901 500
CP901(1/4) 470
R914 56
R921 4.7k
CN902(WHT)
1 DV1 BLU
2 DV2 RED
L901 DY
CN901(RED)
2 DH2
1 DH1
RED BLU
no mark : REC/PB mode

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : panel designation.
- — : B + bus.
- ➩ : IN/OUT direction of B+, B– bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- **Signal path**
  ➨ : REC Y/CHROMA Signal
  ⇨ : PB Y/CHROMA Signal

ts identified by shading and mark for safety. Replace only with ecified.

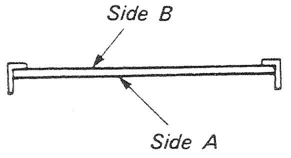
by refer-
include

CCD-V95E

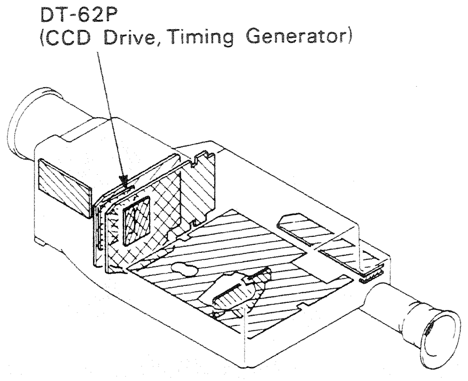
DT-62P(CCD DRIVE, TIMING GENERATOR) PRINTED WIRING BOARD

Note:

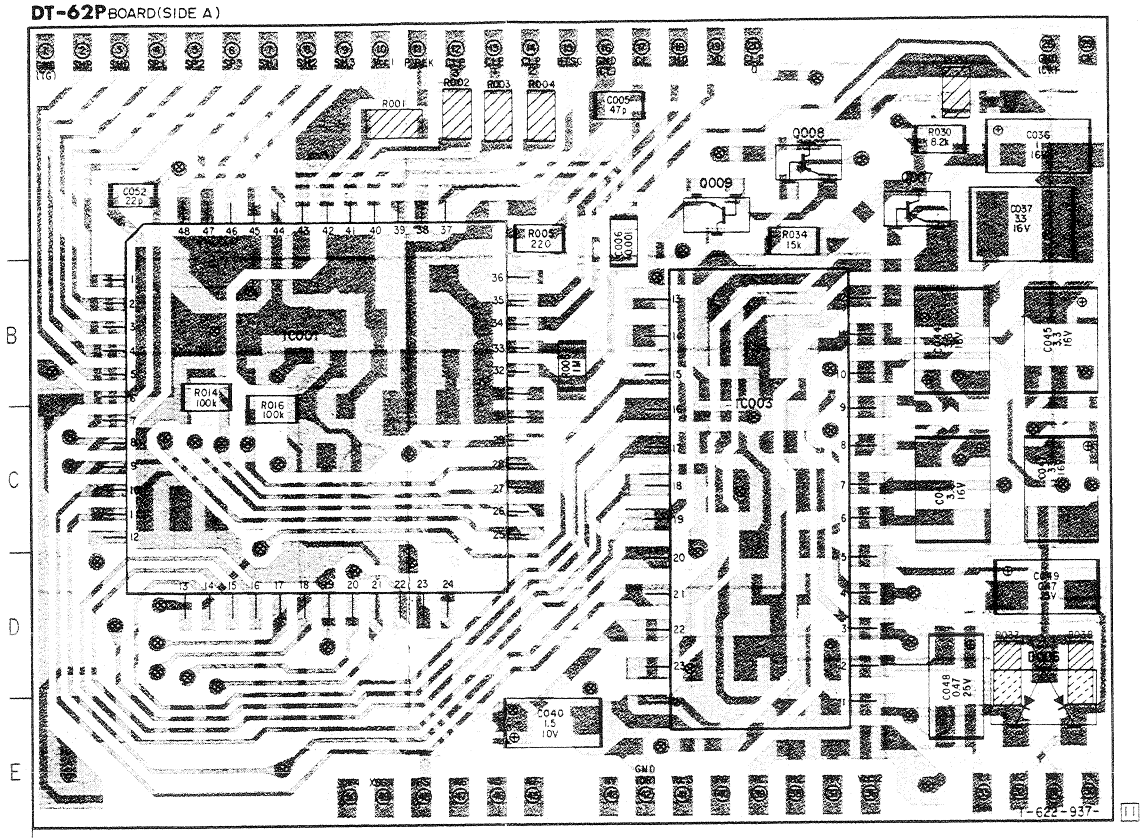
- ⊗ : Through hole.
- ░ : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- ▨ : Printed resistor.


Side B
Side A

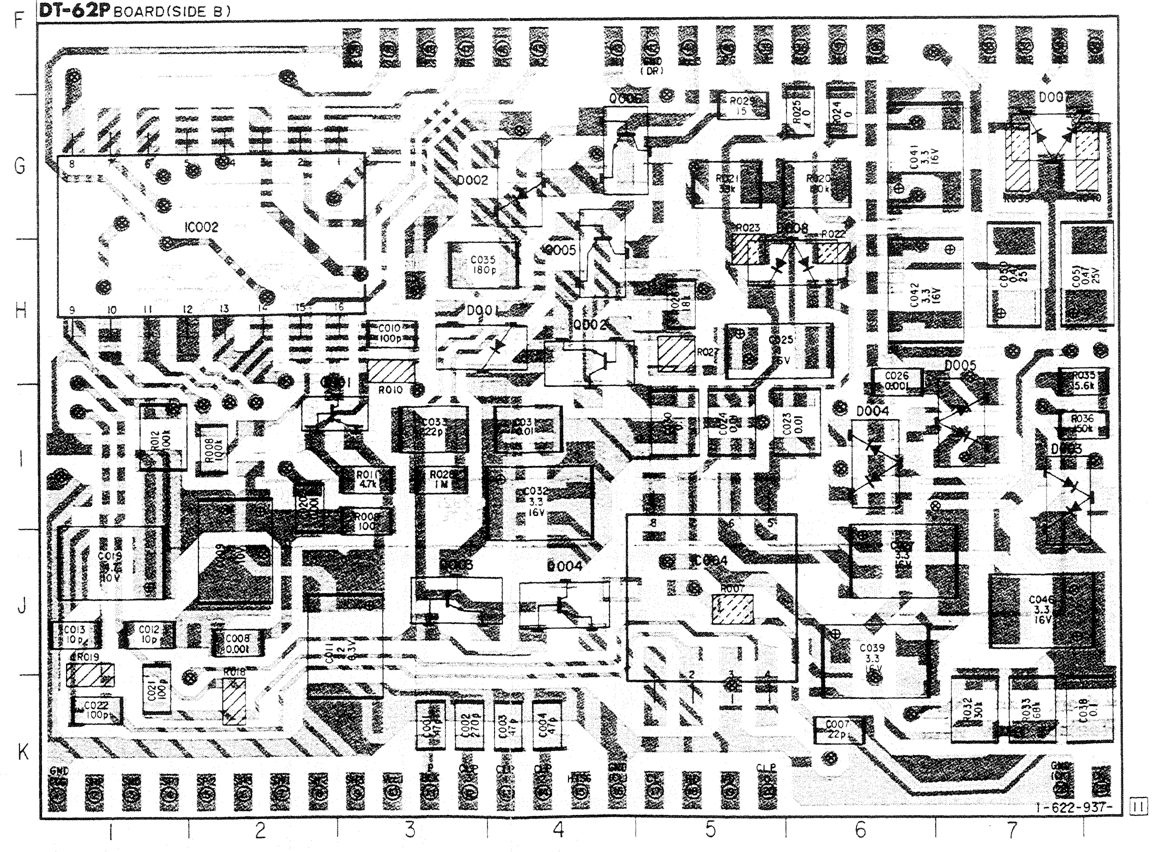
Note	
Soldering side (SIDE A)	: Parts on the soldering side being seen from the soldering are stated.
Component side (SIDE B)	: Parts on the component side being seen from the component are stated.


DT-62P
(CCD Drive, Timing Generator)

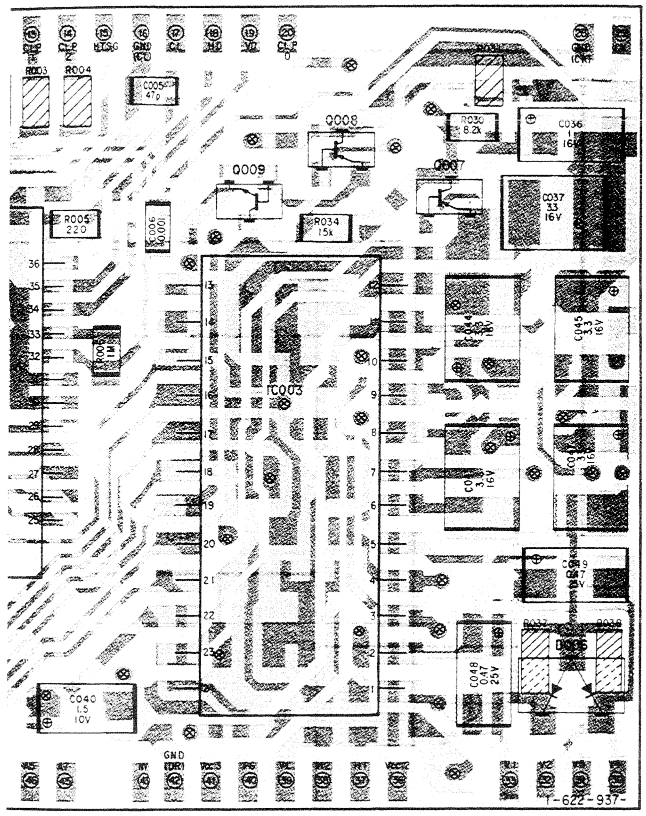
DT-62P BOARD(SIDE A)

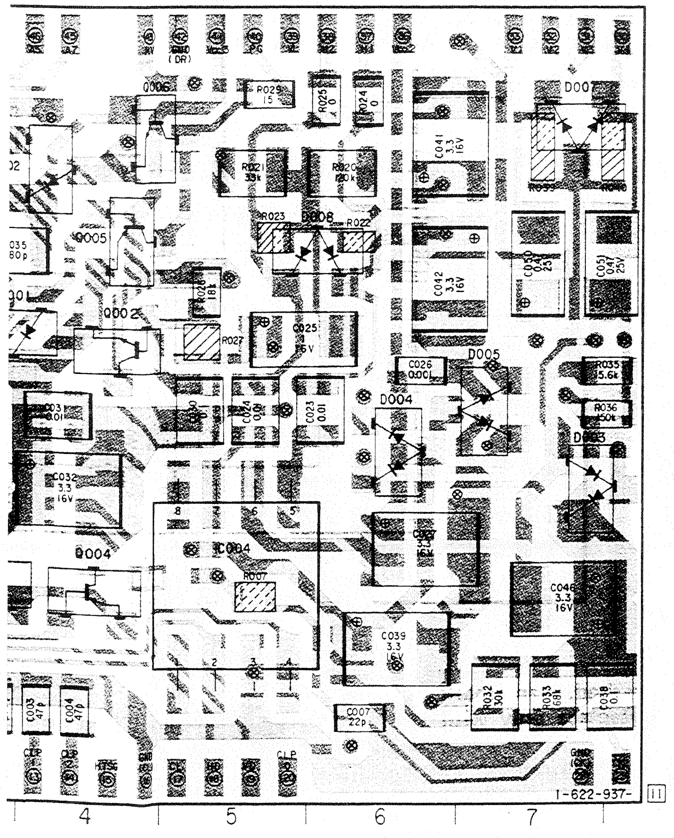

B
C
D
E
IC001
IC003
Q008
Q009
R001
R002
R003
R004
R005 220
R014 100k
R016 100k
R030 8.2k
R034 15k
C005 47p
C006 0.001
C036
C037 33 16V
C040 1.5 10V
C048
C052 22p
GND
1-622-937-11

DT-62P BOARD(SIDE B)

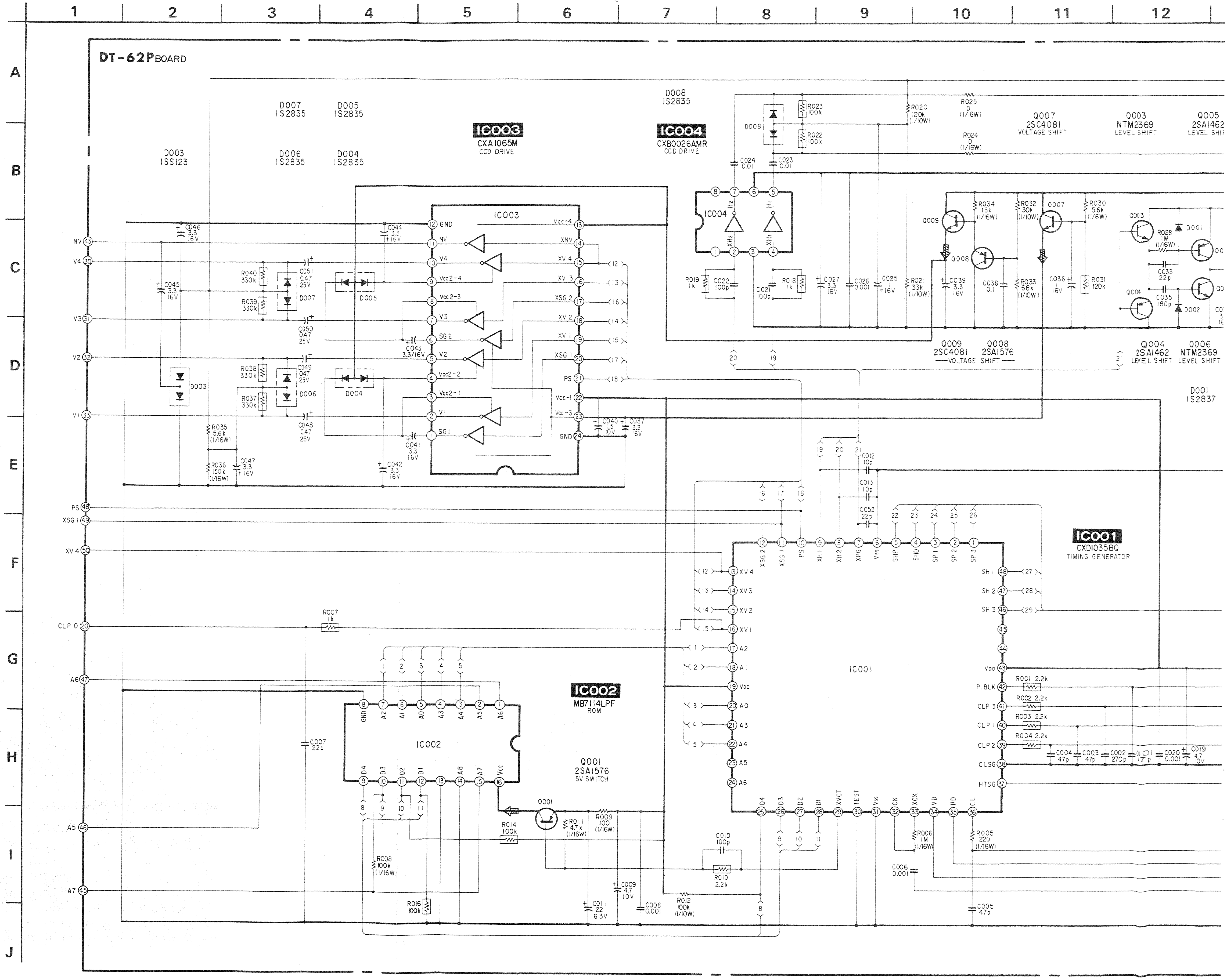

F
G
H
I
J
K
1
2
3
4
5
6
7
IC002
IC004
Q001
Q002
Q003
Q004
Q005
Q006
Q007
Q008
D001
D002
D003
D004
D005
D007
R010
R011 47k
R019
R028 1M
R035 5.6k
R036 150k
C010 100p
C035 180p
C041 3.3 16V
C042 3.3 16V
C026 0.001
C032 3.3 16V
C046 3.3 16V
C039 3.3
C007 22p
C008 0.001
C012 10p
C013 10p
C019 10V
C022 100p
GND
CLP
1-622-937-11

R) PRINTED WIRING BOARD

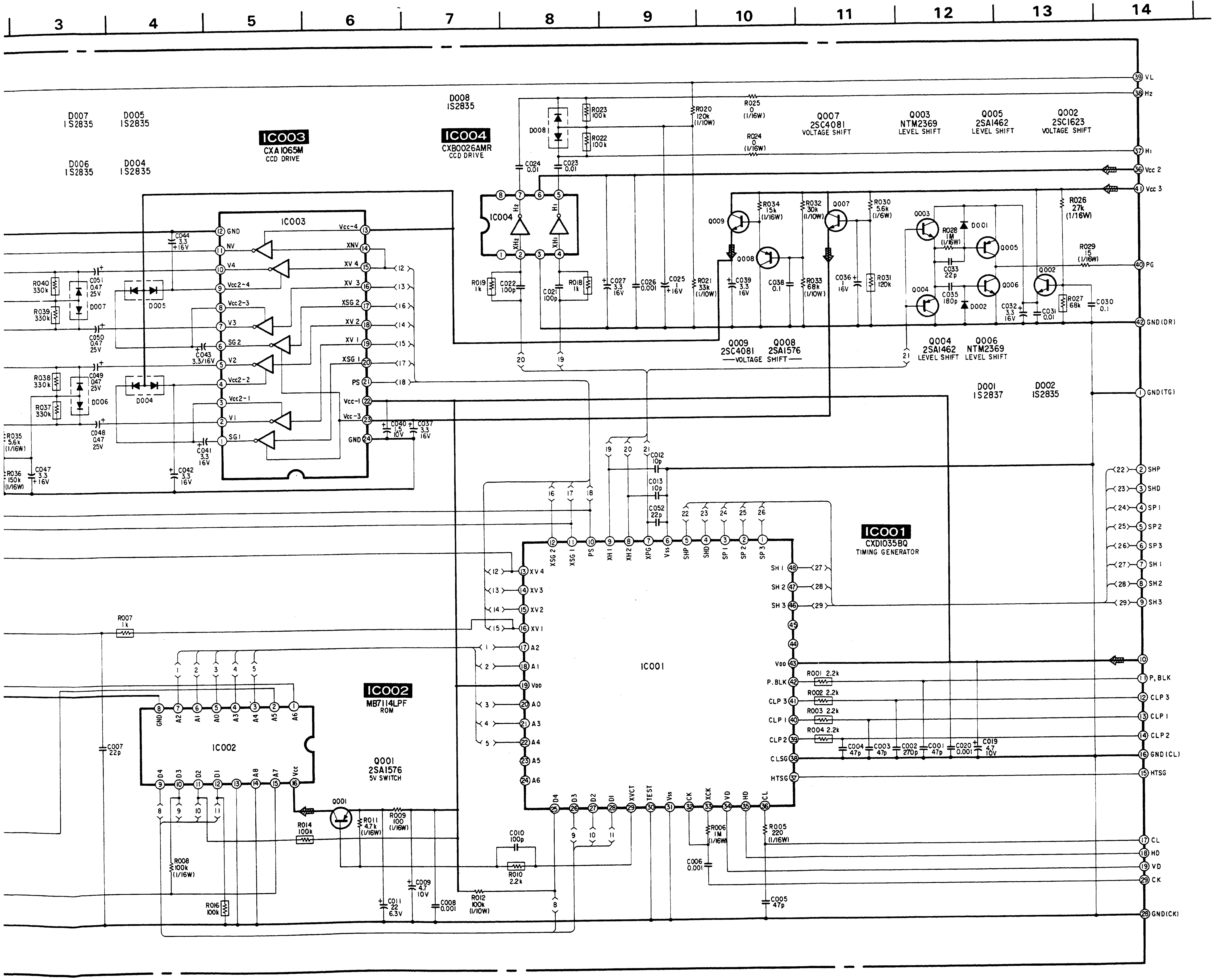

IC003
Q008
Q009
R034 15k
C037 3.3 16V
C040 1.5 16V
GND
1-622-937-11


Q005
Q002
Q004
IC004
D004
D005
D007
C039 3.3
C046 3.3 16V
C007 22p
1-622-937-11
4
5
6
7

DT-62P(CCD DRIVE, TIMING GENERATOR) SCHEMATIC DIAGRAM


DT-62P BOARD
IC003
CXA1065M
CCD DRIVE
IC004
CXB0026AMR
CCD DRIVE
IC002
MB7114LPF
ROM
IC001
CXD1035BQ
TIMING GENERATOR
Q001
2SA1576
5V SWITCH
Q007
2SC4081
VOLTAGE SHIFT
Q003
NTM2369
LEVEL SHIFT
Q005
2SA1462
LEVEL SHIFT
Q009 2SC4081
Q008 2SA1576
VOLTAGE SHIFT
Q004 2SA1462
Q006 NTM2369
LEVEL SHIFT
D001
1S2837
D003
1SS123
D004 1S2835
D005 1S2835
D006 1S2835
D007 1S2835
D008 1S2835
NV
V4
V3
V2
V1
PS
XSG 1
XV 4
CLP 0
A6
A5
A7
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J

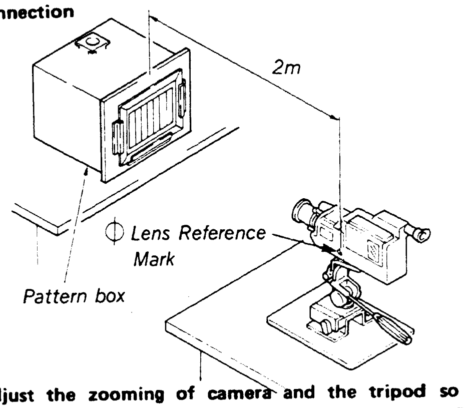
ENERATOR) SCHEMATIC DIAGRAM


3
4
5
6
7
8
9
10
11
12
13
14
IC003
CXA1065M
CCD DRIVE
IC004
CXB0026AMR
CCD DRIVE
IC001
CXD1035BQ
TIMING GENERATOR
IC002
MB7114LPF
ROM
Q001
2SA1576
5V SWITCH
Q007
2SC4081
VOLTAGE SHIFT
Q003
NTM2369
LEVEL SHIFT
Q005
2SA1462
LEVEL SHIFT
Q002
2SC1623
VOLTAGE SHIFT
Q009 2SC4081
Q008 2SA1576
VOLTAGE SHIFT
Q004 2SA1462 LEVEL SHIFT
Q006 NTM2369 LEVEL SHIFT
D001 1S2837
D002 1S2835
D007 1S2835
D005 1S2835
D006 1S2835
D004 1S2835
D008 1S2835
VL
H2
H1
Vcc 2
Vcc 3
PG
GND(DR)
GND(TG)
SHP
SHD
SP1
SP2
SP3
SH1
SH2
SH3
P,BLK
CLP3
CLP1
CLP2
GND(CL)
HTSG
CL
HD
VD
CK
GND(CK)

Note.

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/8 W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristics curve B, unless otherwise noted.
- ▭ : printed resistor.
- ☐ : panel designation.
- ▭ : fusible resistor.
- △ : internal component.
- ▭ : nonflammable resistor.
- ━ : B + bus.
- ⇨ : IN/OUT direction of B+, B− bus.
- ☐ : adjustment for repair.
- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box color bars.
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

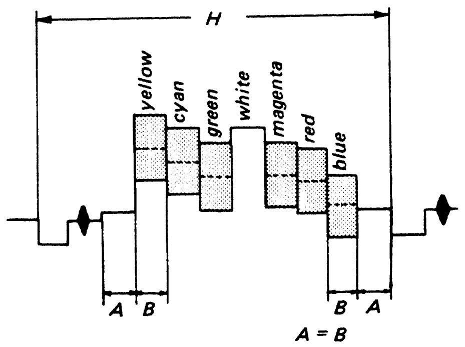

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform of TP801 on VC-24P board.

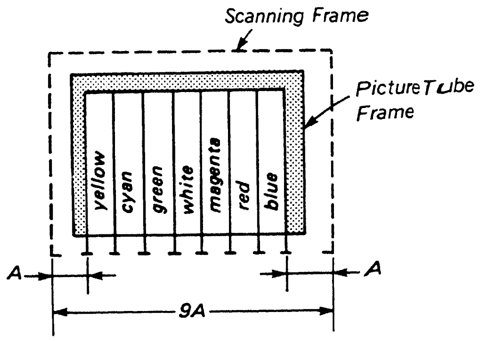
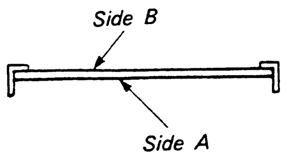

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

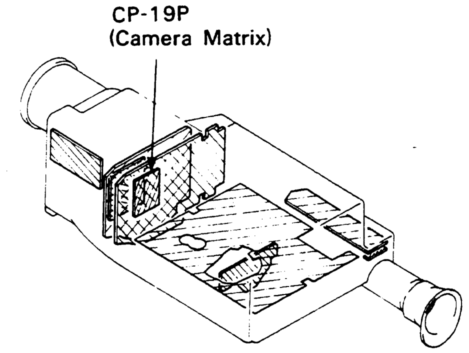
Fig. b Picture of TV monitor screen

Note:

- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- ▨ : Printed resistor.

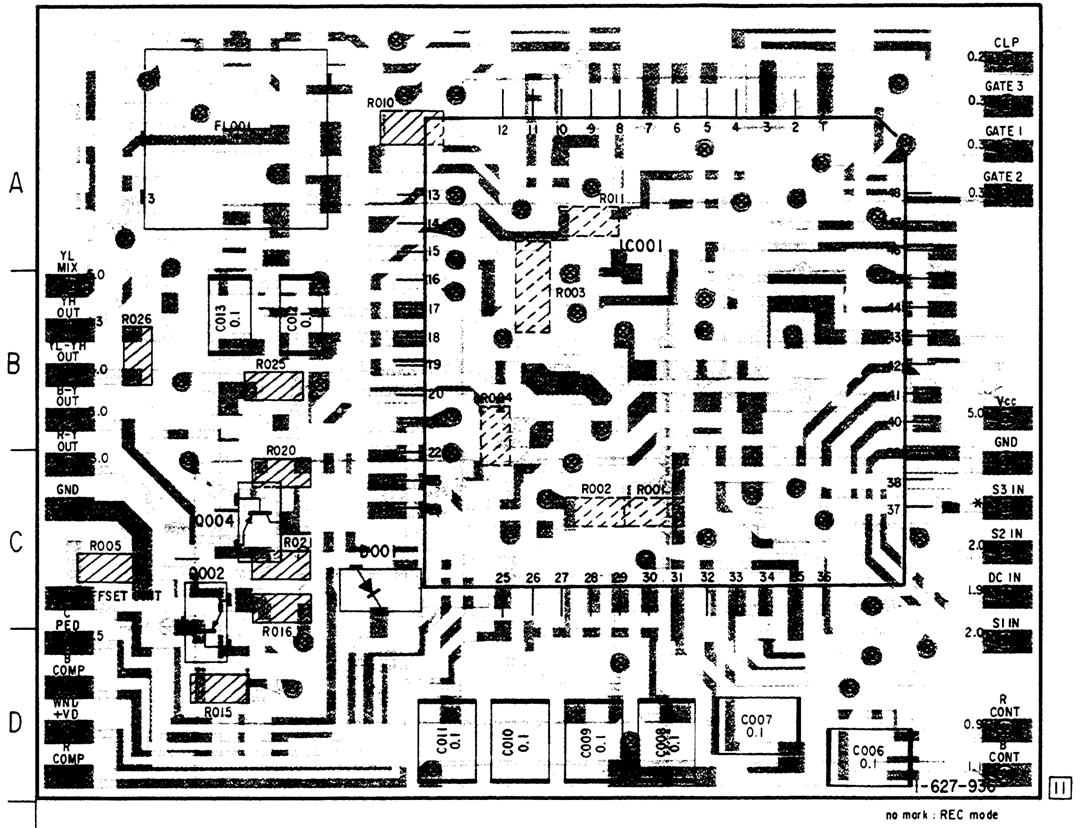

Side B
Side A

Note	
Soldering side (SIDE A)	: Parts on the soldering side being seen from the soldering are stated.
Component side (SIDE B)	: Parts on the component side being seen from the component are stated.


CP-19P
(Camera Matrix)

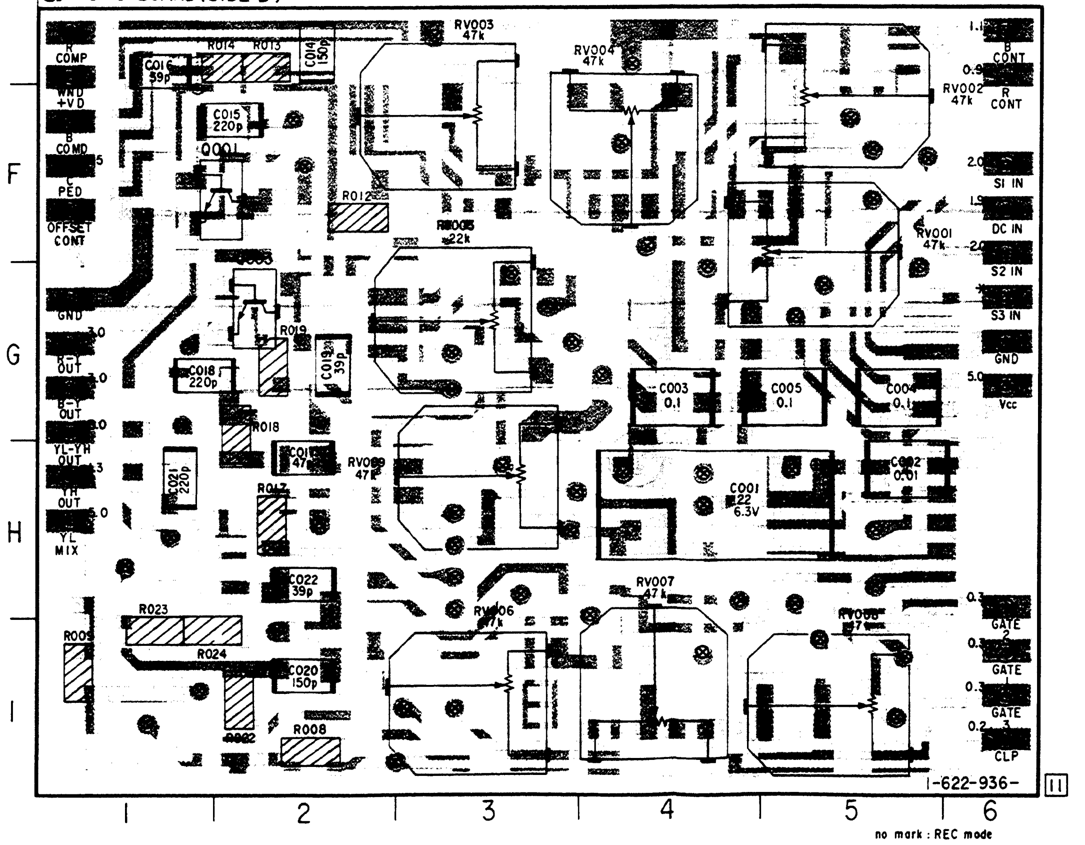
CP-19P(CAMERA MATRIX) PRINTED WIRING BOARD

CP-19P BOARD(SIDE A)

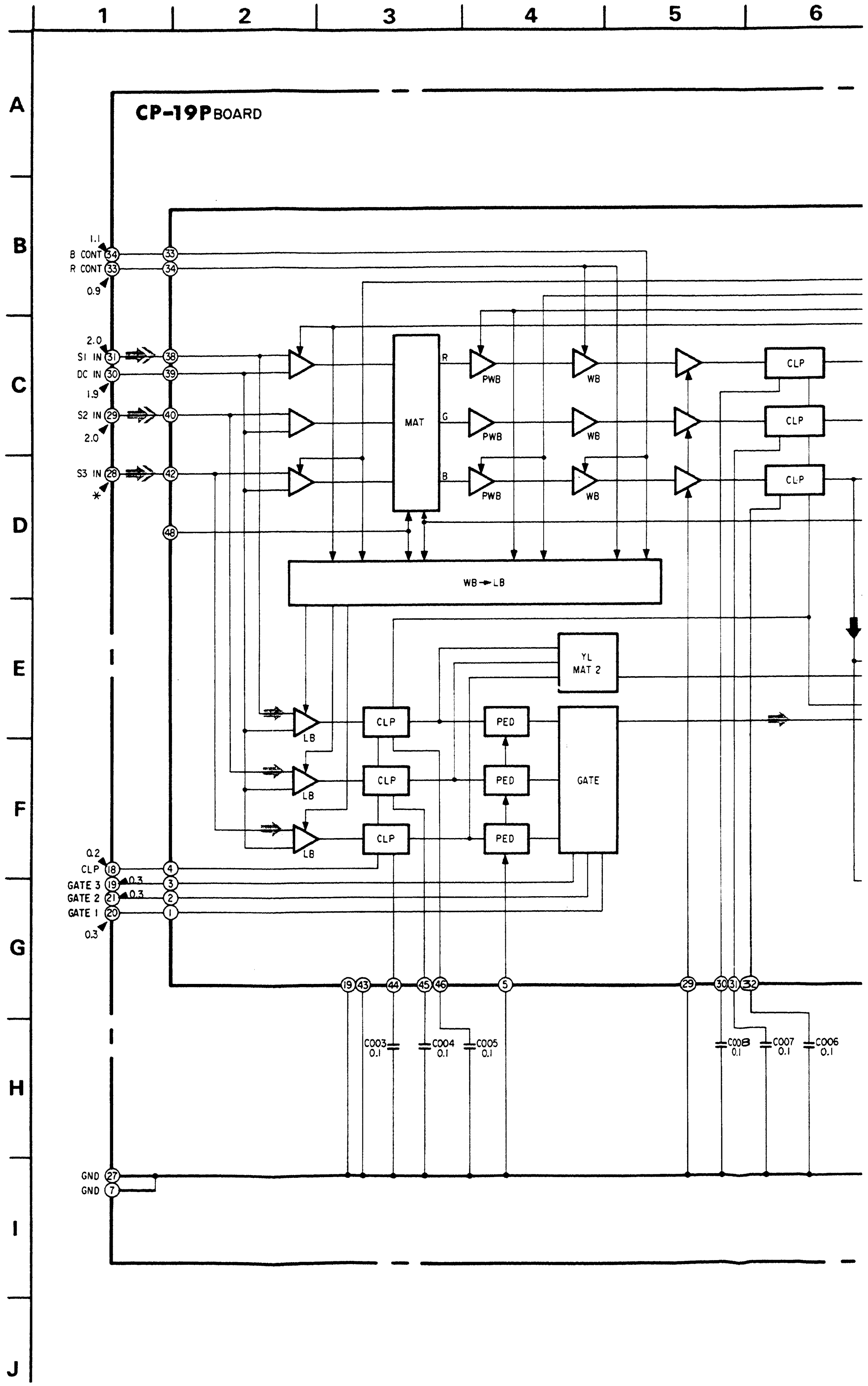

A
B
C
D
FL001
R010
IC001
R011
R003
R004
R002
R001
R026
R025
R020
R005
Q004
Q002
R021
D001
R016
R015
C013 0.1
C012 0.1
C011 0.1
C010 0.1
C009 0.1
C008 0.1
C007 0.1
C006 0.1
YL MIX
YH OUT
YL-YH OUT
B-Y OUT
R-Y OUT
GND
OFFSET CONT
PED
B COMP
WND +VD
R COMP
CLP
GATE 3
GATE 1
GATE 2
Vcc
GND
S3 IN
S2 IN
DC IN
S1 IN
R CONT
B CONT
1-627-936- 11
no mark : REC mode

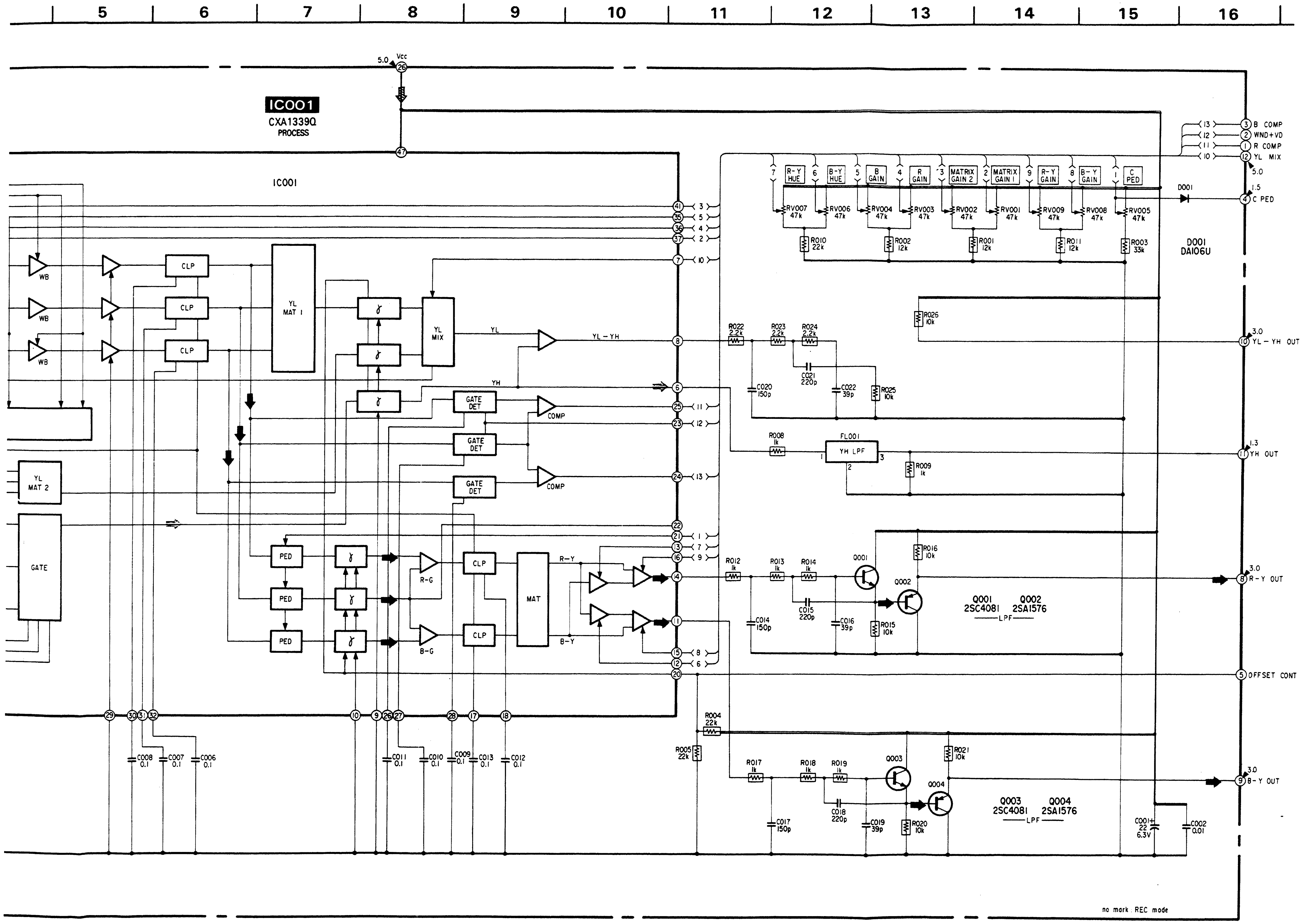
E

CP-19P BOARD(SIDE B)


F
G
H
I
1
2
3
4
5
6
R COMP
WND +VD
B COMP
PED
OFFSET CONT
GND
R-Y OUT
B-Y OUT
YL-YH OUT
YH OUT
YL MIX
R014
R013
C016 39p
C014 150p
C015 220p
Q001
RV003 47k
RV004 47k
RV002 47k
RV001 47k
R012
RV005 22k
C018 220p
C019 39p
R019
R018
C017 47p
RV008 47k
C021 220p
R017
C003 0.1
C005 0.1
C004 0.1
C001 22 6.3V
C002 0.01
C022 39p
R023
R024
R009
C020 150p
R022
R008
RV006 47k
RV007 47k
RV008 47k
B CONT
R CONT
S1 IN
DC IN
S2 IN
S3 IN
GND
Vcc
GATE 2
GATE 1
GATE 3
CLP
1-622-936- 11
no mark : REC mode

CP-19P(CAMERA MATRIX) SCHEMATIC DIAGRAM


1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
CP-19P BOARD
B CONT
R CONT
S1 IN
DC IN
S2 IN
S3 IN
CLP
GATE 3
GATE 2
GATE 1
GND
GND
MAT
PWB
WB
CLP
WB→LB
YL MAT 2
LB
CLP
PED
GATE
C003 0.1
C004 0.1
C005 0.1
C008 0.1
C007 0.1
C006 0.1

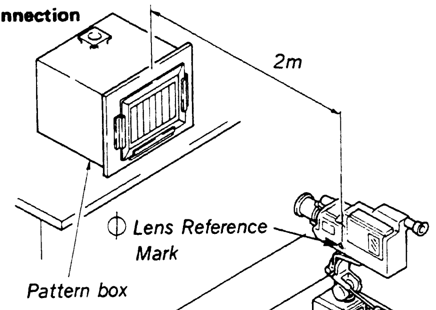

5
6
7
8
9
10
11
12
13
14
15
16
5.0 Vcc
IC001
CXA1339Q
PROCESS
IC001
WB
WB
WB
CLP
CLP
CLP
YL MAT 1
YL MAT 2
GATE
YL MIX
YL
YL − YH
YH
GATE DET
GATE DET
GATE DET
COMP
COMP
PED
PED
PED
R-G
B-G
CLP
CLP
MAT
R−Y
B−Y
R-Y HUE
B-Y HUE
B GAIN
R GAIN
MATRIX GAIN 2
MATRIX GAIN 1
R-Y GAIN
B-Y GAIN
C PED
RV007 47k
RV006 47k
RV004 47k
RV003 47k
RV002 47k
RV001 47k
RV009 47k
RV008 47k
RV005 47k
R010 22k
R002 12k
R001 12k
R011 12k
R003 33k
D001
D001 DA106U
R026 10k
R022 2.2k
R023 2.2k
R024 2.2k
C020 150p
C021 220p
C022 39p
R025 10k
R008 1k
FL001
YH LPF
R009 1k
R012 1k
R013 1k
R014 1k
R016 10k
Q001
Q002
C014 150p
C015 220p
C016 39p
R015 10k
Q001 2SC4081
Q002 2SA1576
LPF
R004 22k
R005 22k
R017 1k
R018 1k
R019 1k
R021 1k
Q003
Q004
C017 150p
C018 220p
C019 39p
R020 10k
Q003 2SC4081
Q004 2SA1576
LPF
C001 22 6.3V
C002 0.01
C008 0.1
C007 0.1
C006 0.1
C011 0.1
C010 0.1
C009 0.1
C013 0.1
C012 0.1
B COMP
WND+VD
R COMP
YL MIX
C PED
YL − YH OUT
YH OUT
R−Y OUT
OFFSET CONT
B−Y OUT
5.0
1.5
3.0
1.3
3.0
3.0
no mark : REC mode

- **Signal path**
  - ⇨ : REC Y Signal
  - ➡ : REC CHROMA Signal
  - ⇨ : REC Y/CHROMA Signal

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/32 W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : printed resistor.
- ▭ : panel designation.
- : fusible resistor.
- △ : internal component.
- : nonflammable resistor.
- ━ : B + bus.
- ⇨ : IN/OUT direction of B+, B − bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box color bars.
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

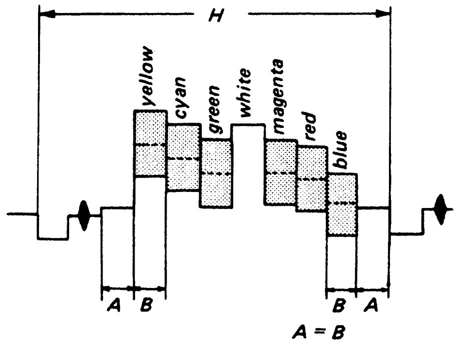

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform of TP801 on VC-24P board.

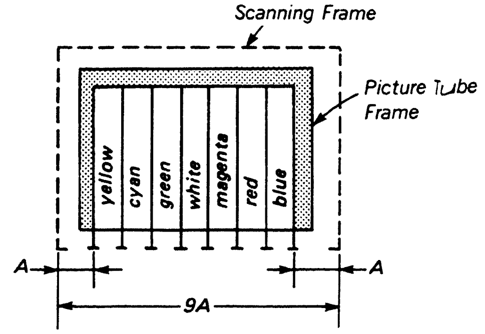
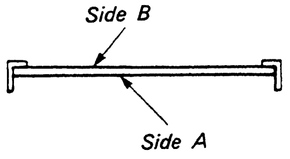

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

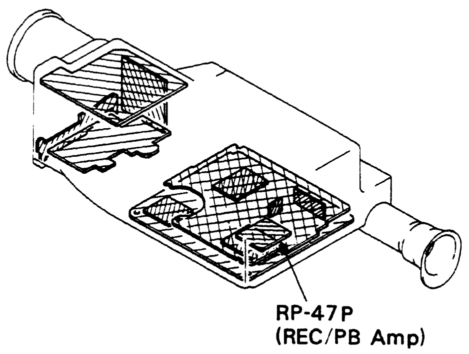
Fig. b Picture of TV monitor screen.

Note:

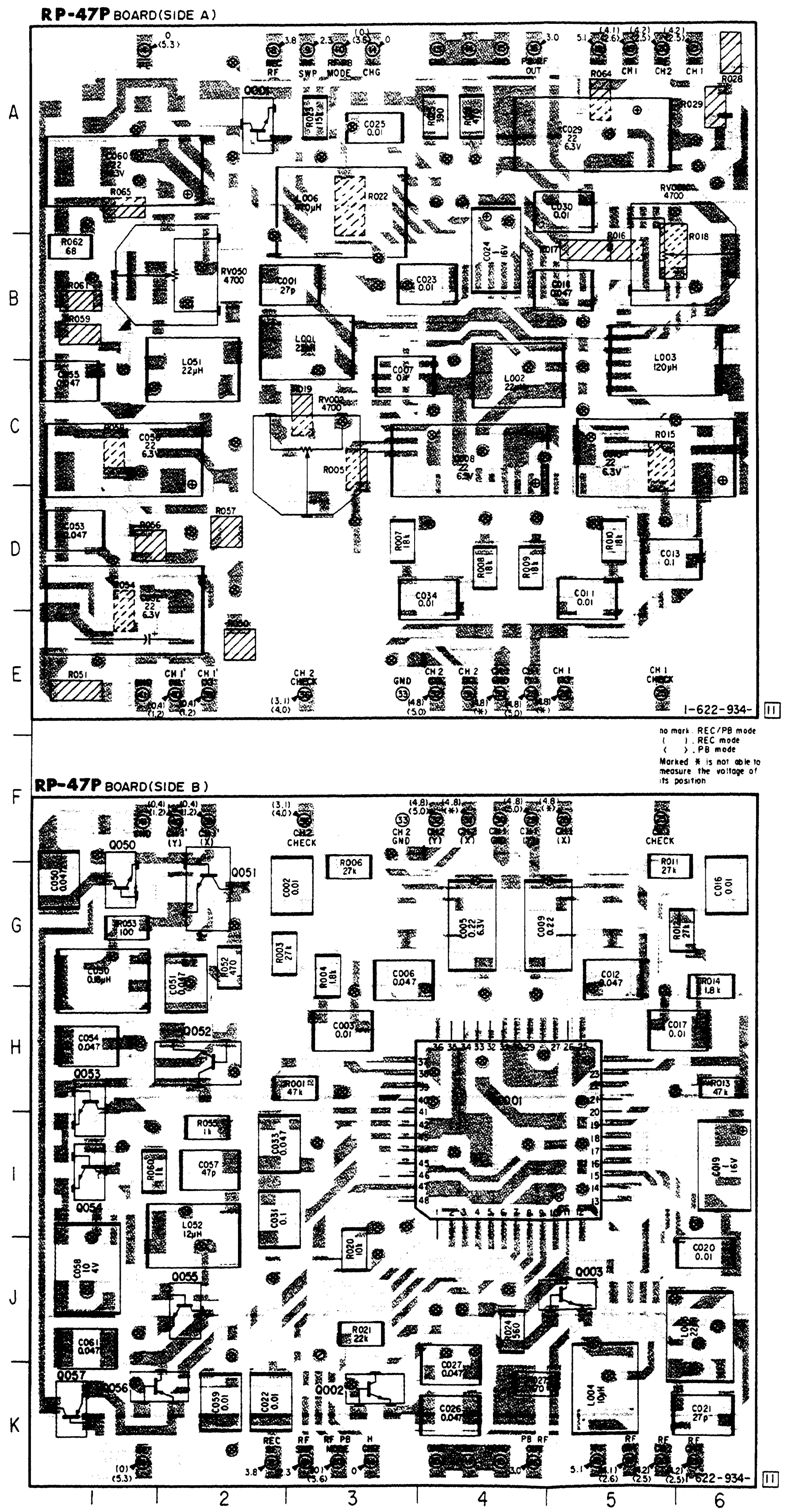
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- ▨ : Printed resistor.


Side B
Side A

Note	
Soldering side (SIDE A)	: Parts on the soldering side being seen from the soldering are stated.
Component side (SIDE B)	: Parts on the component side being seen from the component are stated.

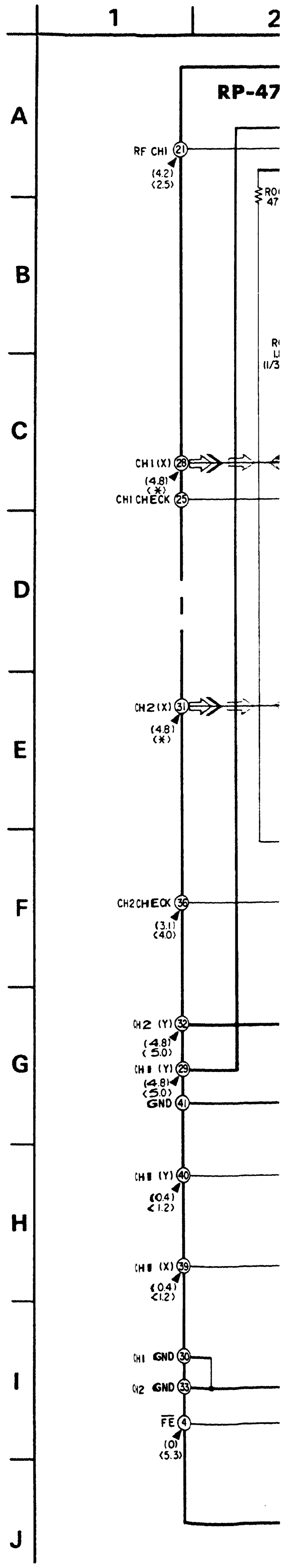

RP-47P
(REC/PB Amp)

RP-47P(REC/PB AMP) PRINTED WIRING BOARD

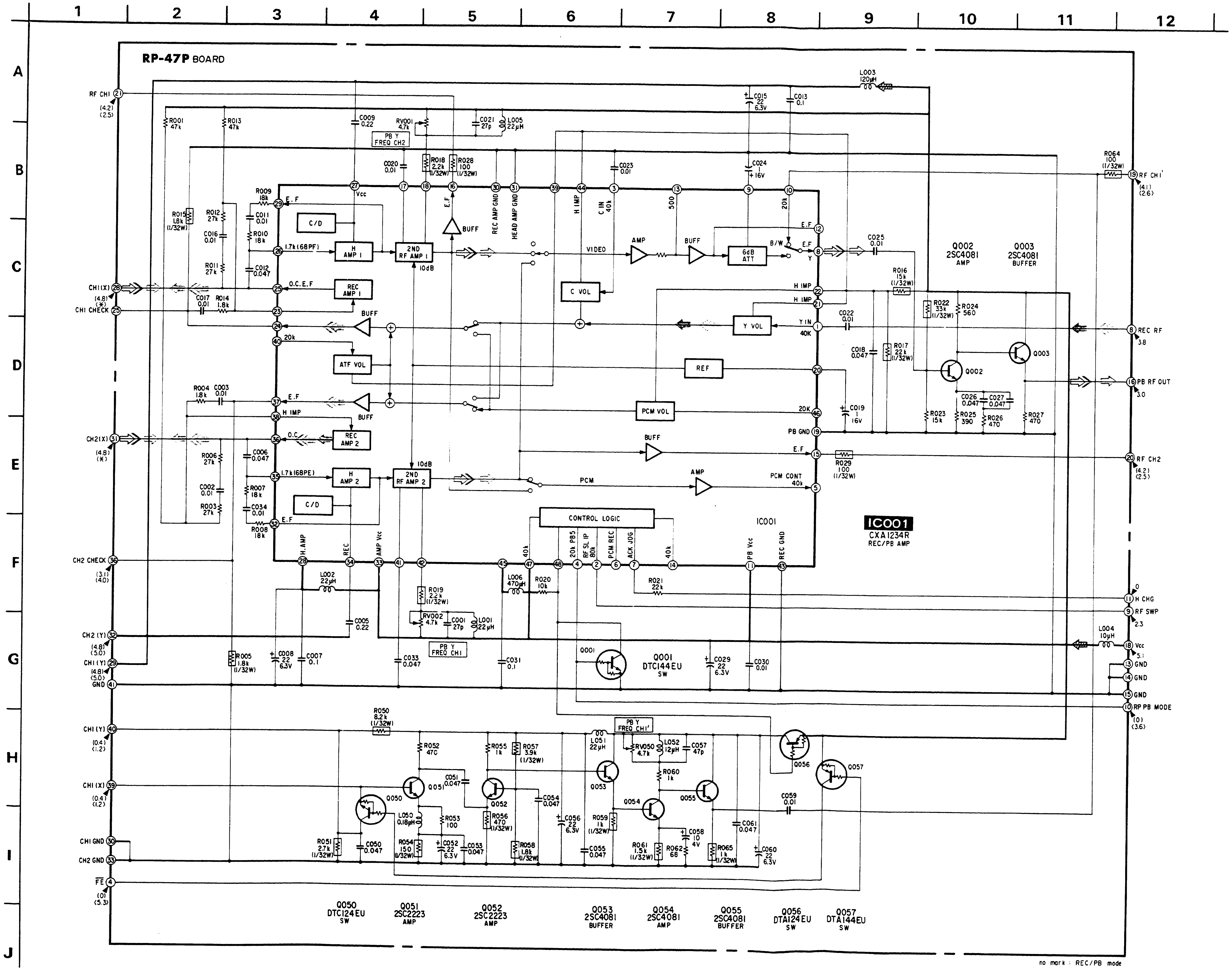

RP-47P BOARD(SIDE A)
RP-47P BOARD(SIDE B)
A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
1-622-934-11

no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Marked ※ is not able to measure the voltage of its position.

RP-47P(REC/PB AMP)


1
2
A
B
C
D
E
F
G
H
I
J
RP-47
RF CH1
CH1(X)
CH1 CHECK
CH2(X)
CH2CHECK
CH2 (Y)
CH1 (Y)
GND
CH1 GND
CH2 GND
FE

RP-47P(REC/PB AMP) SECHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
RP-47P BOARD
RF CH1 ②
CH1(X) ㉖
CH1 CHECK ㉕
CH2(X) ㉛
CH2 CHECK ㊱
CH2 (Y) ㉜
CH1 (Y) ㉙
GND ㊶
CH1 (Y) ㊵
CH1 (X) ㊴
CH1 GND ㉚
CH2 GND ㉝
FE ④
RF CH1' ⑲
REC RF ⑧
PB RF OUT ⑯
RF CH2 ⑳
H CHG ⑪
RF SWP ⑨
Vcc ⑱
GND ⑬
GND ⑭
GND ⑮
RP PB MODE ⑩
C/D
H AMP 1
2ND RF AMP 1
REC AMP 1
BUFF
ATF VOL
REC AMP 2
H AMP 2
2ND RF AMP 2
C VOL
VIDEO
AMP
BUFF
6dB ATT
Y VOL
REF
PCM VOL
PCM
CONTROL LOGIC
IC001
CXA1234R
REC/PB AMP
Q001 DTC144EU SW
Q002 2SC4081 AMP
Q003 2SC4081 BUFFER
PB Y FREQ CH2
PB Y FREQ CH1
PB Y FREQ CH1'
L003 120μH
L004 10μH
Q050 DTC124EU SW
Q051 2SC2223 AMP
Q052 2SC2223 AMP
Q053 2SC4081 BUFFER
Q054 2SC4081 AMP
Q055 2SC4081 BUFFER
Q056 DTA124EU SW
Q057 DTA144EU SW

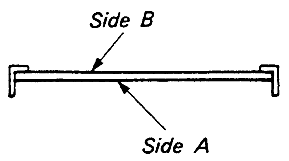
no mark : REC/PB mode
( ) : REC mode
⟨ ⟩ : PB mode
Marked ✱ is not able to measure the voltage of its position

Note:

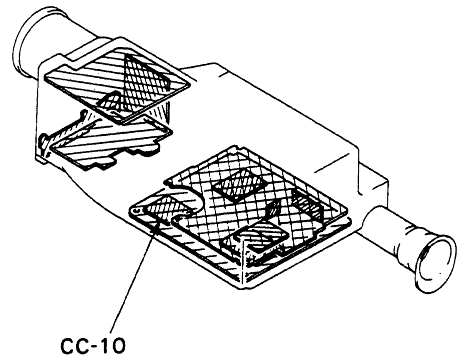
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/32 W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- -▭- : printed resistor.
- ▭ : panel designation.
- -▣- : Nonflammable resistor
- ——— : B+ bus.
- ⇨ : IN/OUT direction of B+, B− bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- **Signal path**
  - ⇢ : REC Y/CHROMA Signal
  - ⇨ : PB Y/CHROMA Signal
  - ⇛ : REC AUDIO Signal
  - ⇒ : PB AUDIO Signal

CC-10(CHROMA PROCESS, APC PULSE GENERATOR) PRINTED WIRING BOARD

Note:
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- ▨ : Printed resistor.

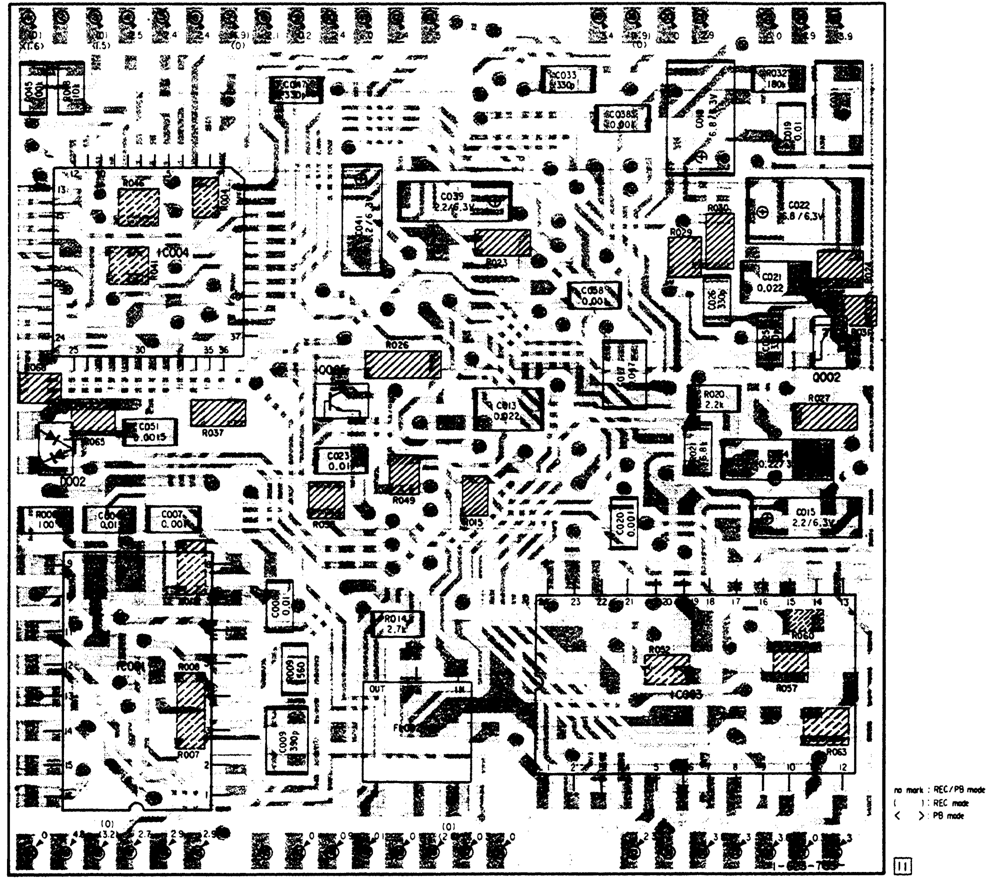

Side B
Side A

Note	
Soldering side (SIDE A)	: Parts on the soldering side being seen from the soldering are stated.
Component side (SIDE B)	: Parts on the component side being seen from the component are stated.

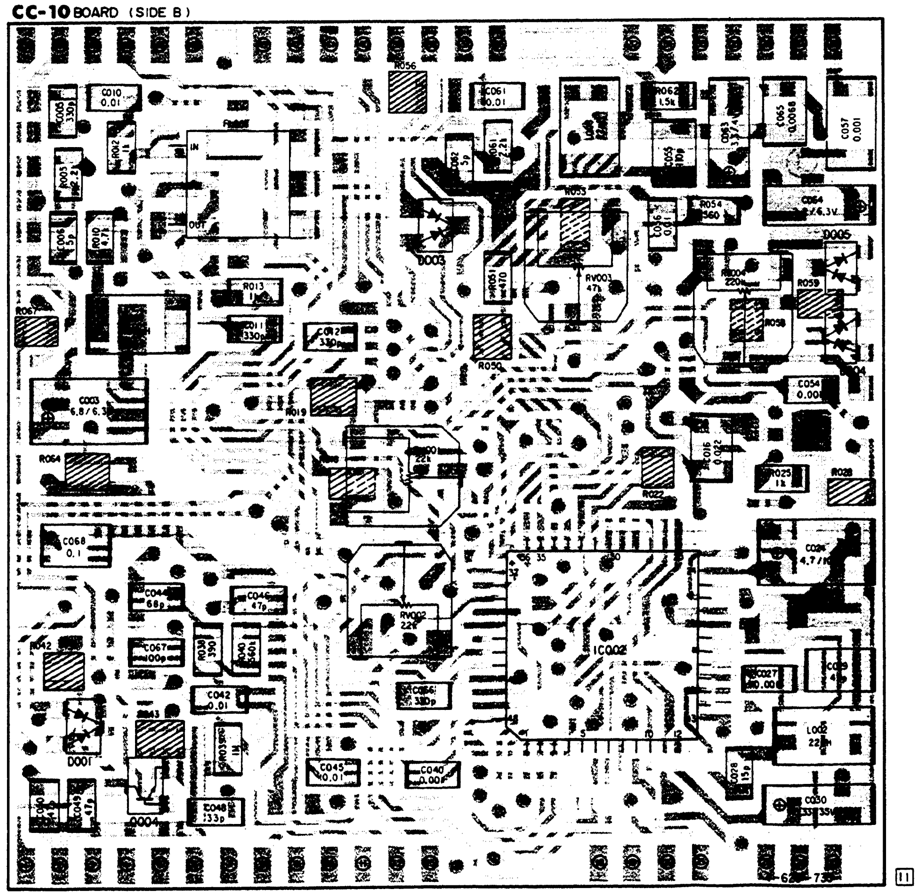


CC-10
(Chroma Process, APC Pulse Generator)

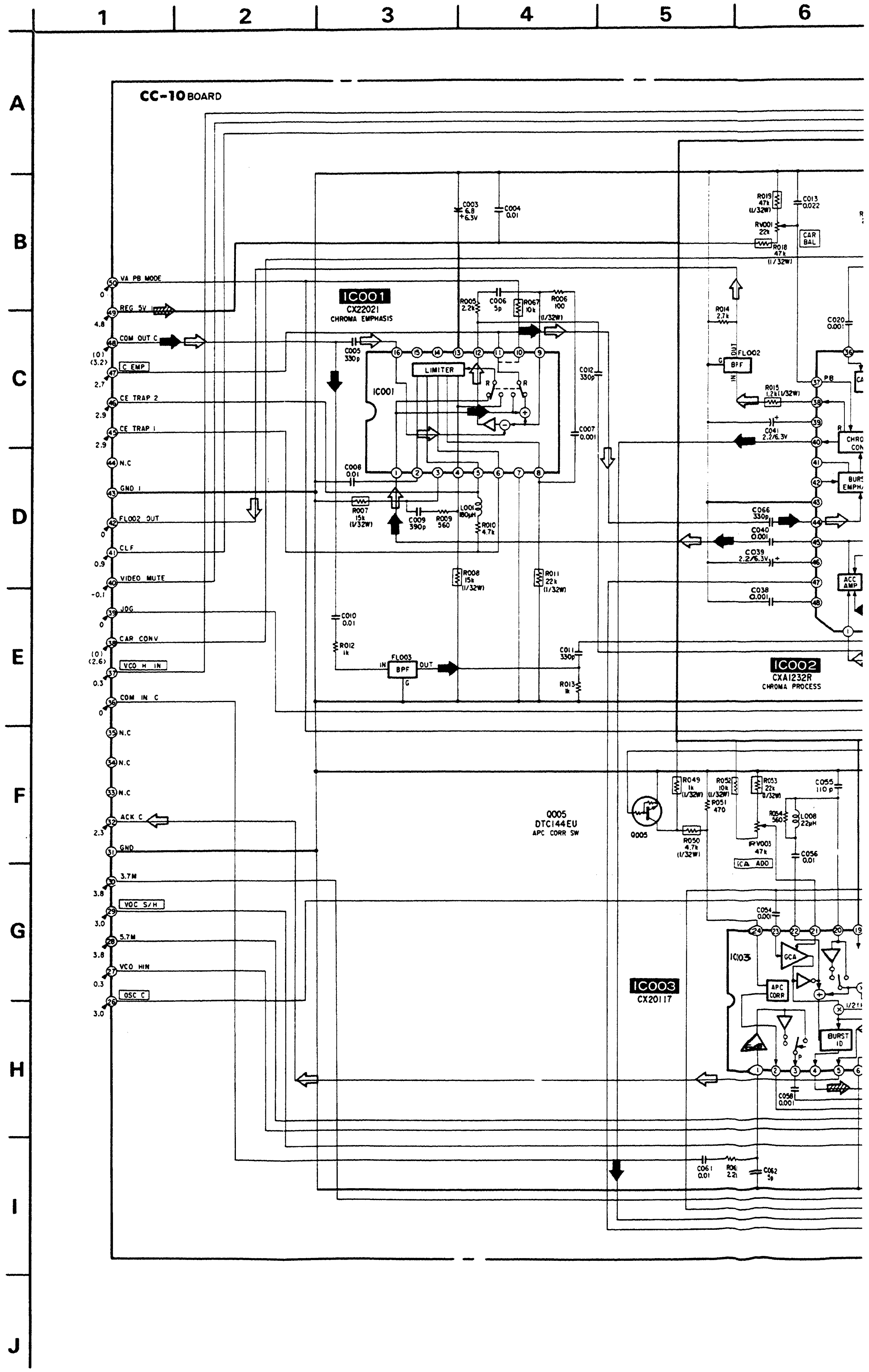
CC-10 BOARD (SIDE A)


no mark : REC/PB mode
( ) : REC mode
< > : PB mode

CC-10 BOARD (SIDE B)

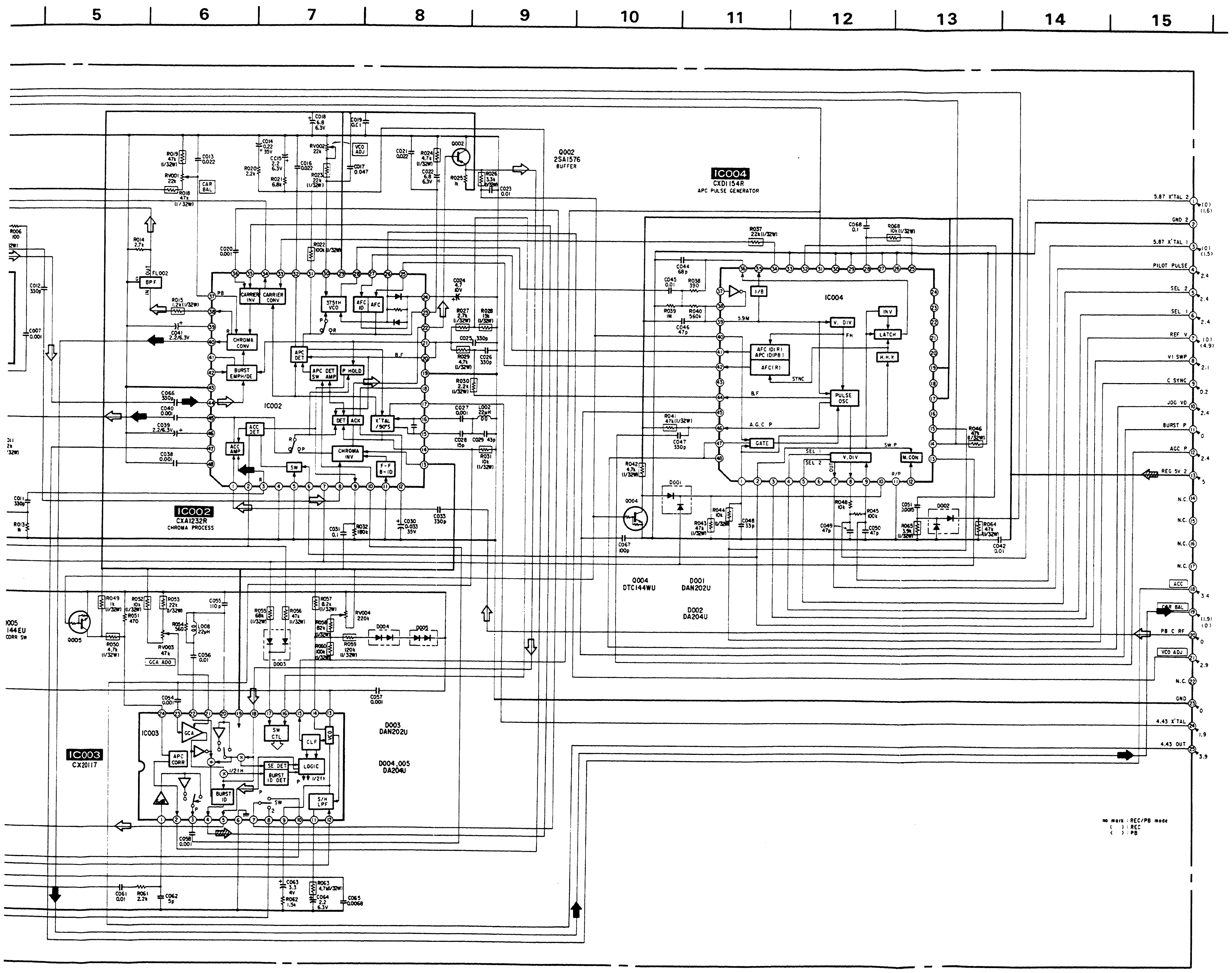


CC-10(CHROMA PROCESS, APC PULSE GENERATOR) SCHEMATIC DIAGRAM


1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
CC-10 BOARD
IC001
CX22021
CHROMA EMPHASIS
LIMITER
IC002
CXA1232R
CHROMA PROCESS
IC003
CX20117
Q005
DTC144EU
APC CORR SW
VA PB MODE
REG 5V
COM OUT C
C EMP
CE TRAP 2
CE TRAP 1
N.C
GND
FL002 OUT
CLF
VIDEO MUTE
JOG
CAR CONV
VCO H IN
COM IN C
ACK C
GND
3.7M
VDC S/H
5.7M
VCO HIN
OSC C
FL003 BPF
FL002 BPF
CAR BAL
ACC AMP
BURST ID

VIDEO VIDEO

HEMATIC DIAGRAM

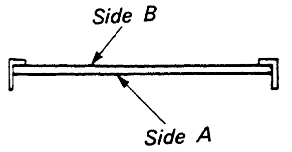

5
6
7
8
9
10
11
12
13
14
15
IC002
CXA1232R
CHROMA PROCESS
IC004
CXD1154R
APC PULSE GENERATOR
IC003
CX20117
Q002
2SA1576
BUFFER
Q004
DTC144WU
D001
DAN202U
D002
DA204U
D003
DAN202U
D004,005
DA204U
Q005
CHROMA CONV
BURST EMPH/DE
ACC DET
ACC AMP
CARRIER INV
CARRIER CONV
3751H VCO
AFC ID
AFC
APC DET
APC DET SW AMP
P HOLD
DET ACK
X'TAL /90°S
CHROMA INV
F-F B-ID
SW
BPF
FL002
CAR BAL
VCO ADJ
GCA ADJ
1/8
V. DIV
INV
LATCH
H.H.Y
AFC ID(R) APC ID(PB)
AFC(R)
PULSE OSC
GATE
V.DIV
M.CON
GCA
APC CORR
SW CTL
CLF
SE DET
BURST ID DET
LOGIC
BURST ID
S/H LPF
5.87 X'TAL 2
GND 2
5.87 X'TAL 1
PILOT PULSE
SEL 2
SEL 1
REF V
V1 SWP
C SYNC
JOG VD
BURST P
AGC P
REG 5V 2
N.C.
N.C.
N.C.
N.C.
ACC
CAR BAL
PB C RF
VCO ADJ
N.C.
GND
4.43 X'TAL
4.43 OUT
no mark : REC/PB mode
( ) : REC
< > : PB

Note:

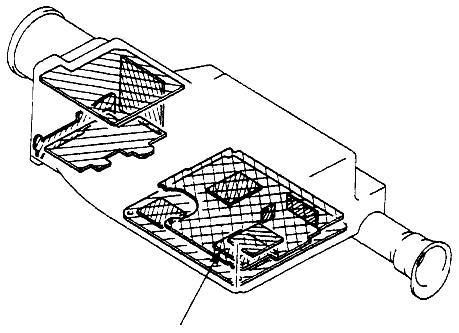
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/16 W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ☐ : panel designation.
- ⊶ : fusible resistor.
- △ : internal component.
- ▭ : nonflammable resistor.
- ━ : B + bus.
- ⇨ : IN/OUT direction of B+, B− bus.
- ☐ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

- **Signal path**
  - ➡ : REC CHROMA Signal
  - ⇨ : PB CHROMA Signal

Note:
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- ▨ : Printed resistor.


Side B
Side A

Note	
Soldering side (SIDE A)	: Parts on the soldering side being seen from the soldering are stated.
Component side (SIDE B)	: Parts on the component side being seen from the component are stated.

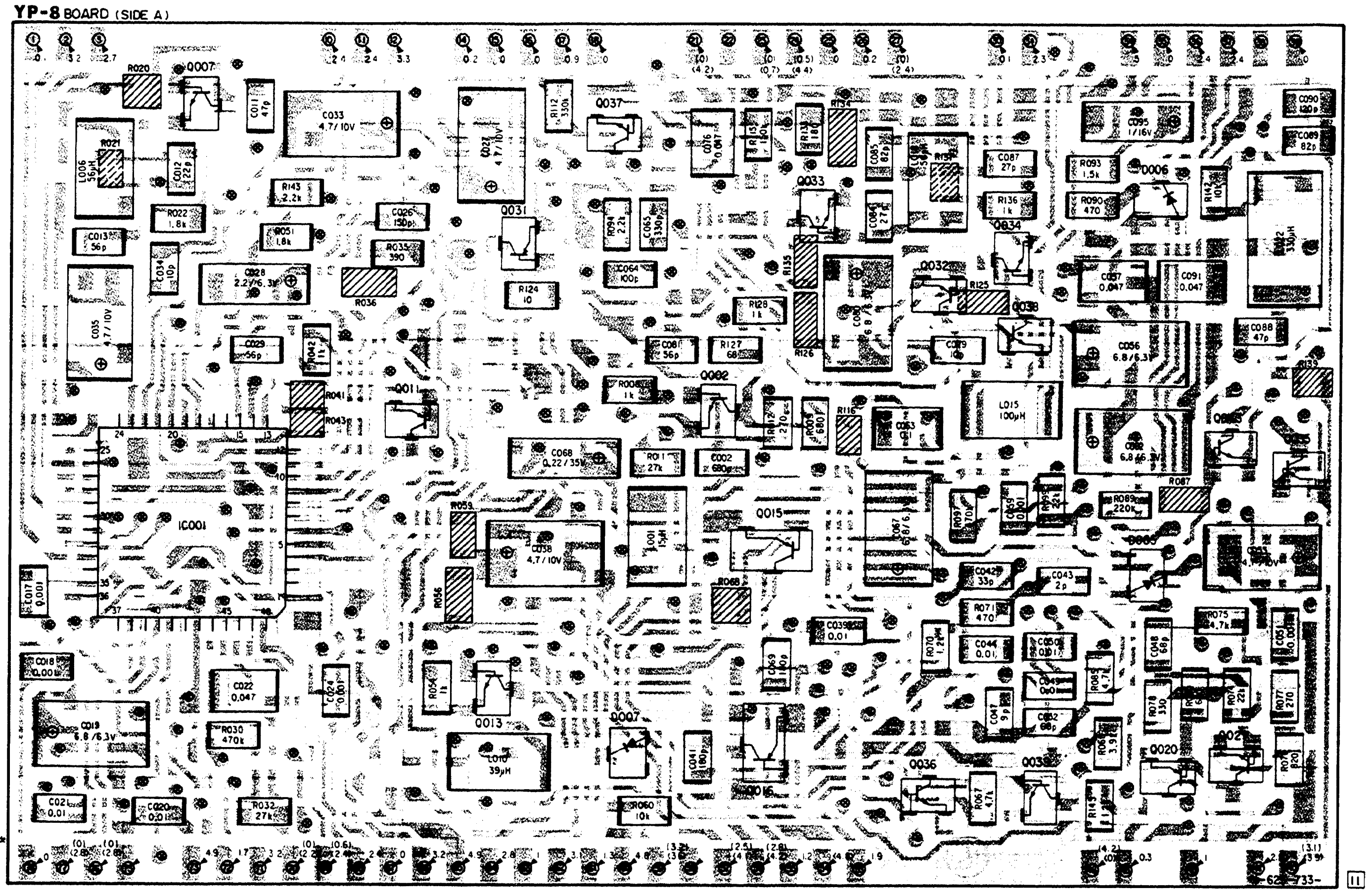


YP-8
(Y Process, Comb Filter)

Note:
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/16 W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : printed resistor.
- ▭ : panel designation.
- ▭ : fusible resistor.
- △ : internal component.
- ▭ : nonflammable resistor.
- ━ : B + bus.
- ⇨ : IN/OUT direction of B+, B− bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

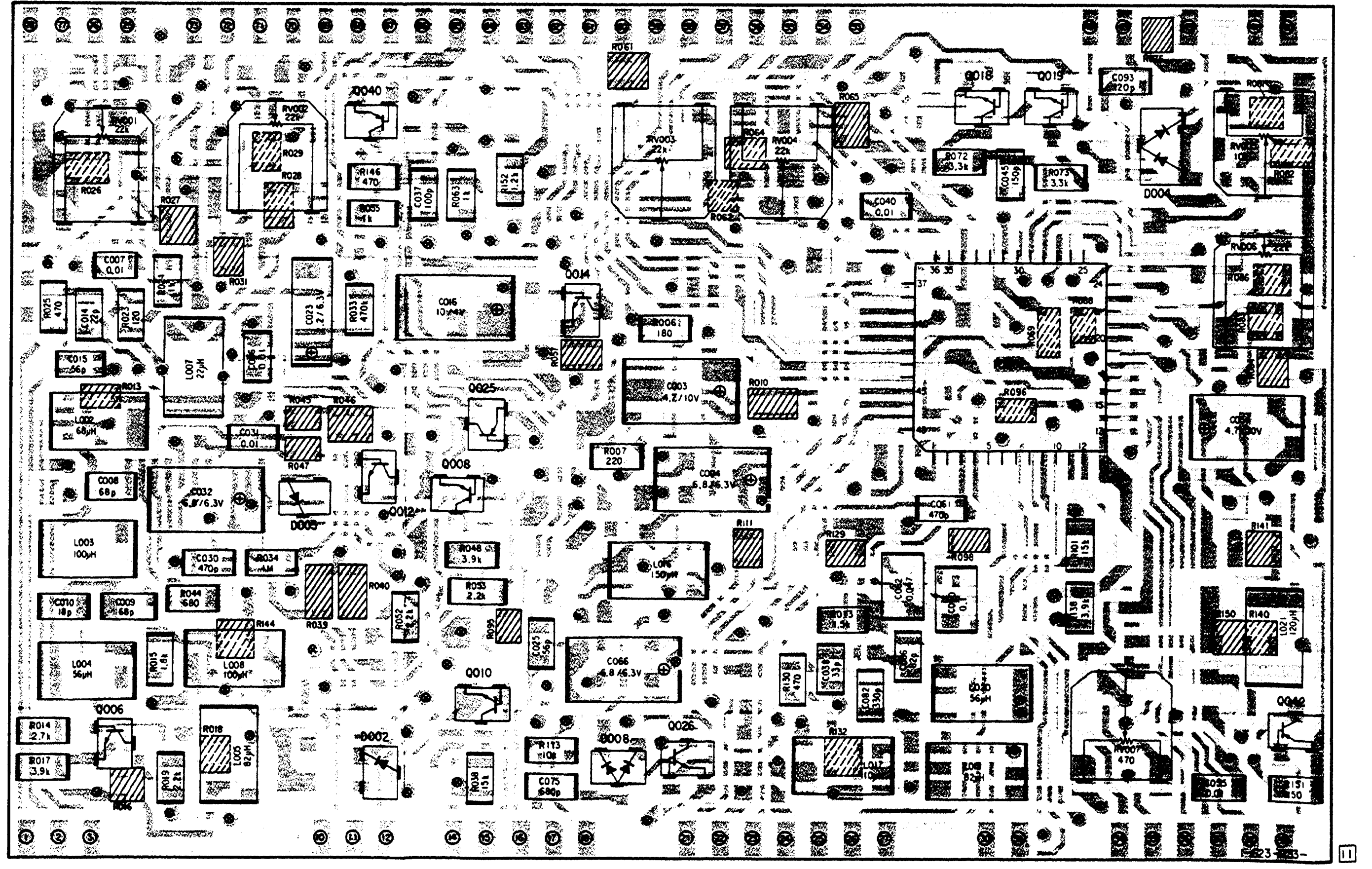
YP-8(Y PROCESS, COMB FILTER) PRINTED WIRING BOARD

YP-8 BOARD (SIDE A)

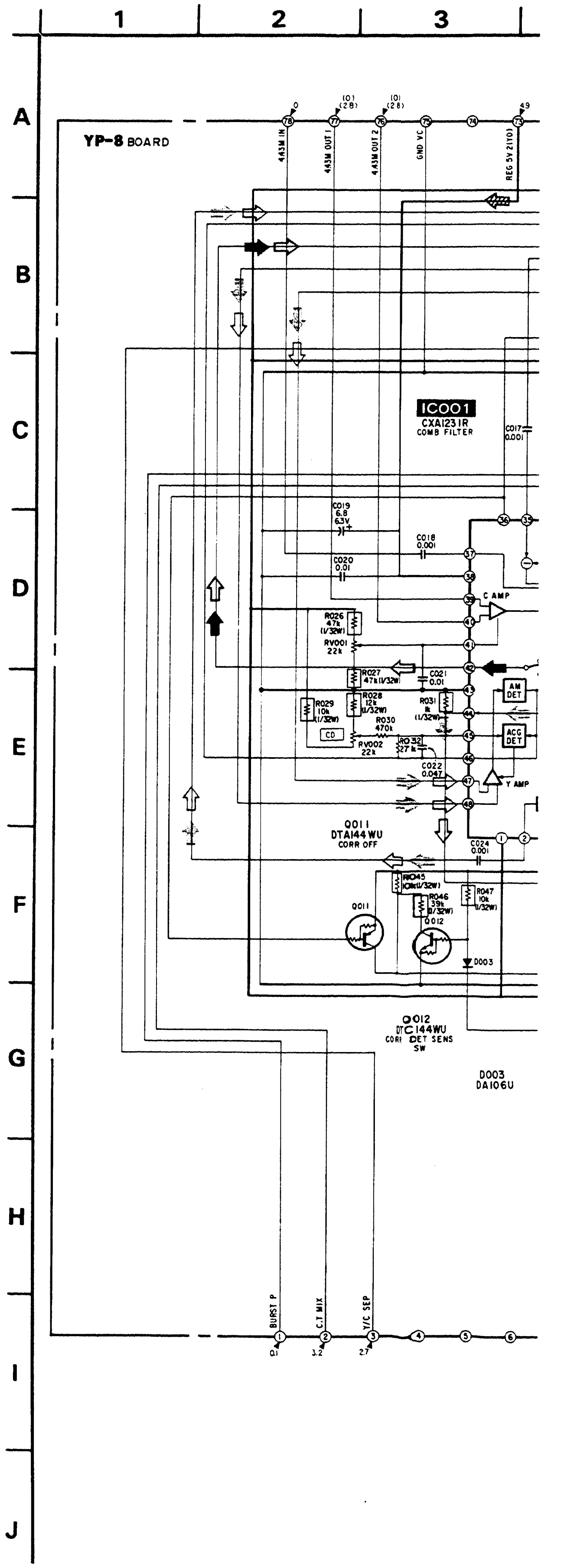


no mark : REC/PB mode
( ) : REC mode
< > : PB mode

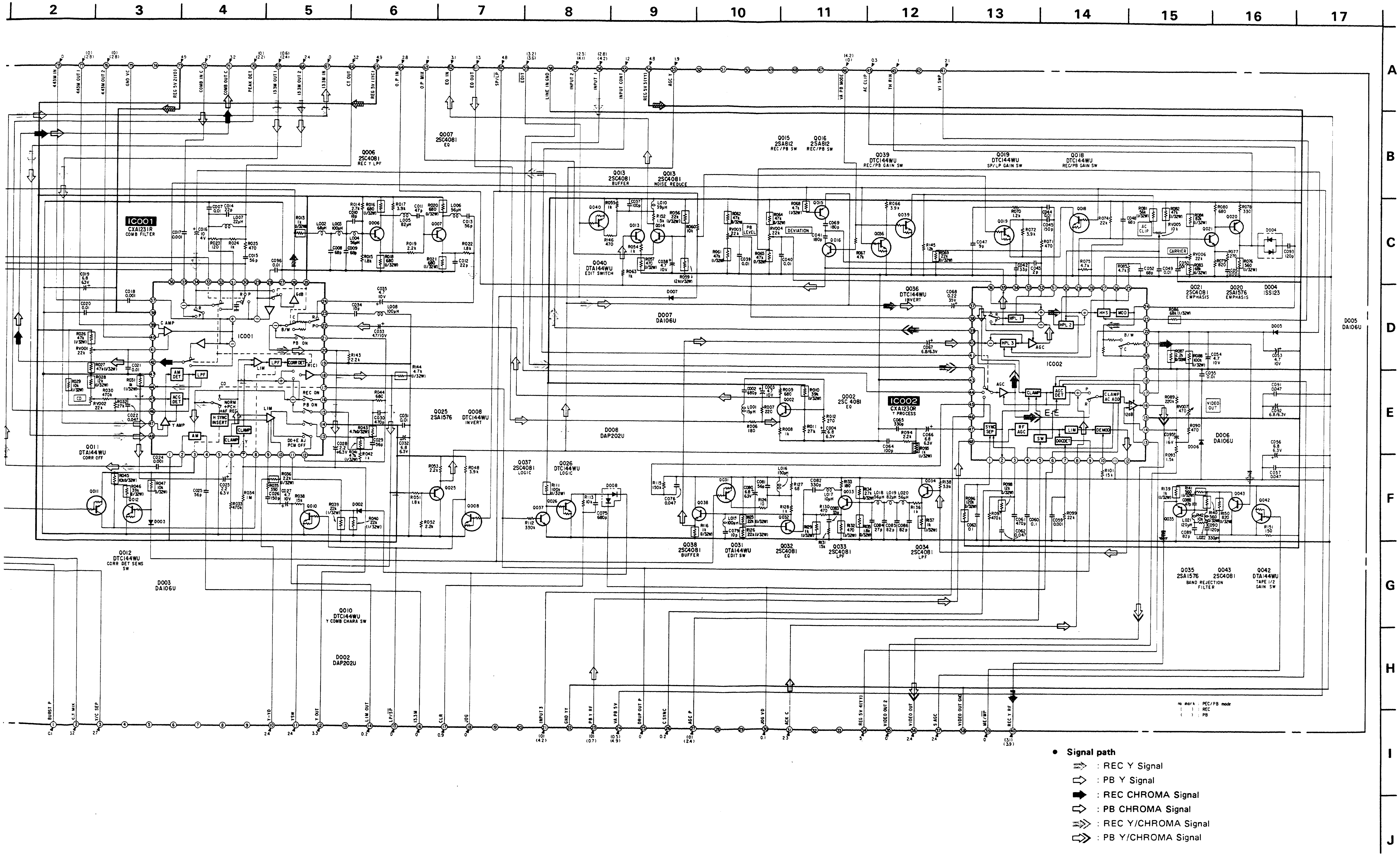
YP-8 BOARD (SIDE B)



YP-8(Y PROCESS, COMB FILTER) SCHEMATIC DIAG


1
2
3
A
B
C
D
E
F
G
H
I
J
YP-8 BOARD
IC001
CXA1231R
COMB FILTER
C AMP
Y AMP
AM DET
ACC DET
Q011
DTA144WU
CORR OFF
Q012
DTC144WU
CORR DET SENS SW
D003
DA106U
BURST P
C.T MIX
Y/C SEP

SS, COMB FILTER) SCHEMATIC DIAGRAM

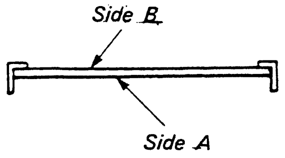

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
IC001
CXA1231R
COMB FILTER
IC002
CXA1230R
Y PROCESS
Q006 2SC4081 REC Y LPF
Q007 2SC4081 EQ
Q013 2SC4081 BUFFER
Q013 2SC4081 NOISE REDUCE
Q015 2SA1812 REC/PB SW
Q016 2SA1812 REC/PB SW
Q039 DTC144WU REC/PB GAIN SW
Q019 DTC144WU SP/LP GAIN SW
Q018 DTC144WU REC/PB GAIN SW
Q040 DTC144WU EDIT SWITCH
D007 DA106U
Q036 DTC144WU INVERT
Q021 2SC4081 EMPHASIS
Q020 2SA1576 EMPHASIS
D004 1SS123
D005 DA106U
Q002 2SC4081 EQ
Q025 2SA1576
Q008 DTC144WU INVERT
D008 DAP202U
Q011 DTA144WU CORR OFF
Q012 DTC144WU CORR DET SENS SW
D003 DA106U
Q010 DTC144WU Y COMB CHARA SW
D002 DAP202U
Q037 2SC4081 LOGIC
Q026 DTC144WU LOGIC
Q038 2SC4081 BUFFER
Q031 DTA144WU EDIT SW
Q032 2SC4081 EQ
Q033 2SC4081 LPF
Q034 2SC4081 LPF
D006 DA106U
Q035 2SA1576
Q043 2SC4081 BAND REJECTION FILTER
Q042 DTA144WU TAPE 1/2 GAIN SW
no mark : PEC/PB mode
( ) : REC
( ) : PB

- Signal path

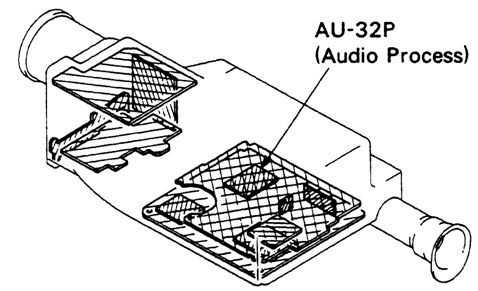
⇨ : REC Y Signal
⇨ : PB Y Signal
➡ : REC CHROMA Signal
⇨ : PB CHROMA Signal
⇨ : REC Y/CHROMA Signal
⇨ : PB Y/CHROMA Signal

Note:

- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- ▨ : Printed resistor.


Side B
Side A

Note
Soldering side (SIDE A) : Parts on the soldering side being seen from the soldering are stated.
Component side (SIDE B) : Parts on the component side being seen from the component are stated.

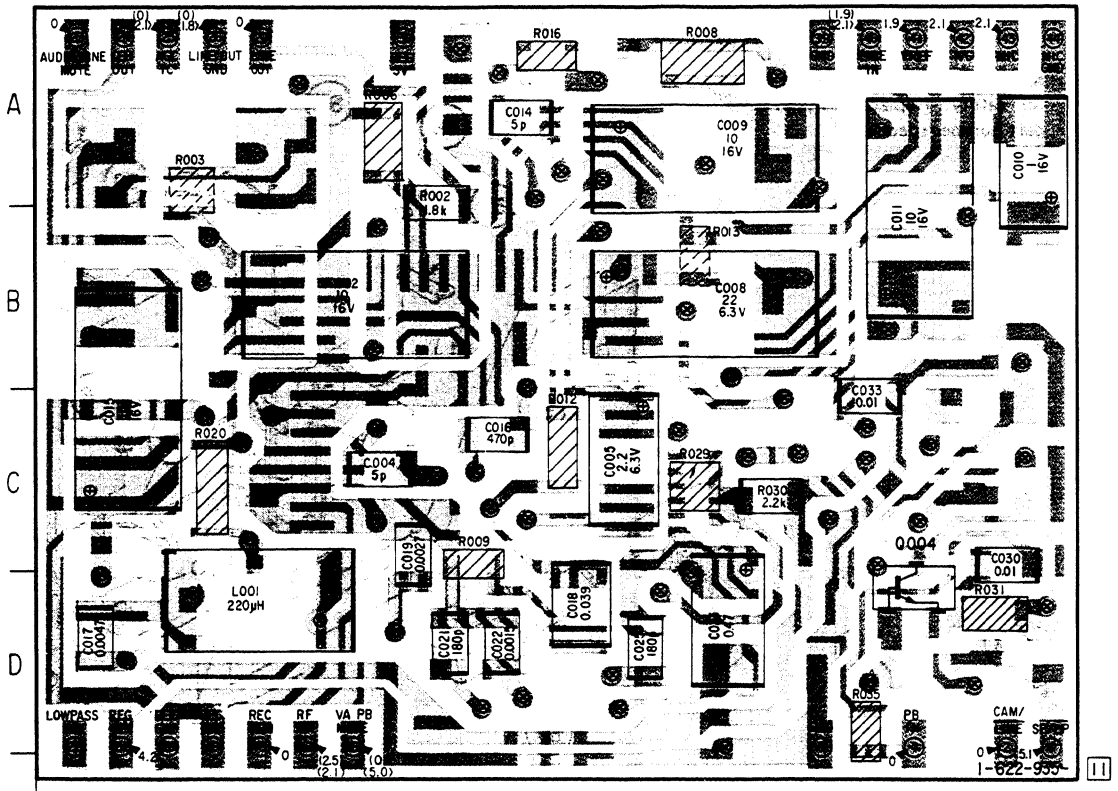

AU-32P
(Audio Process)

Note:

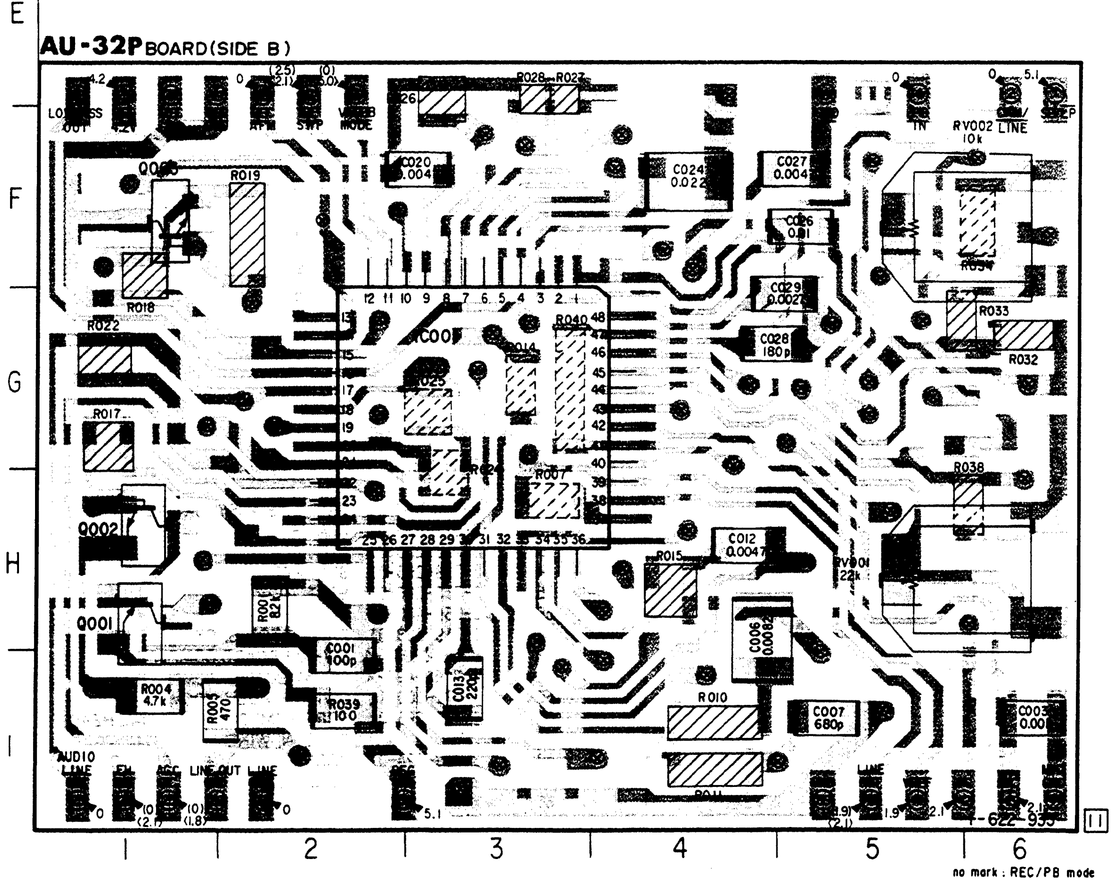
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/6W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : printed resistor.
- ☐ : panel designation.
- : fusible resistor.
- △ : internal component.
- : nonflammable resistor.
- : B + bus.
- : IN/OUT direction of B+, B− bus.
- ☐ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
  (Remove the W331 on VA-36 board.
  Input point: Pin ① of W331 on VA-36 board.
  (75Ω terminated))
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

AU-32P(AUDIO PROCESS) PRINTED WIRING BOARD

AU-32P BOARD (SIDE A)

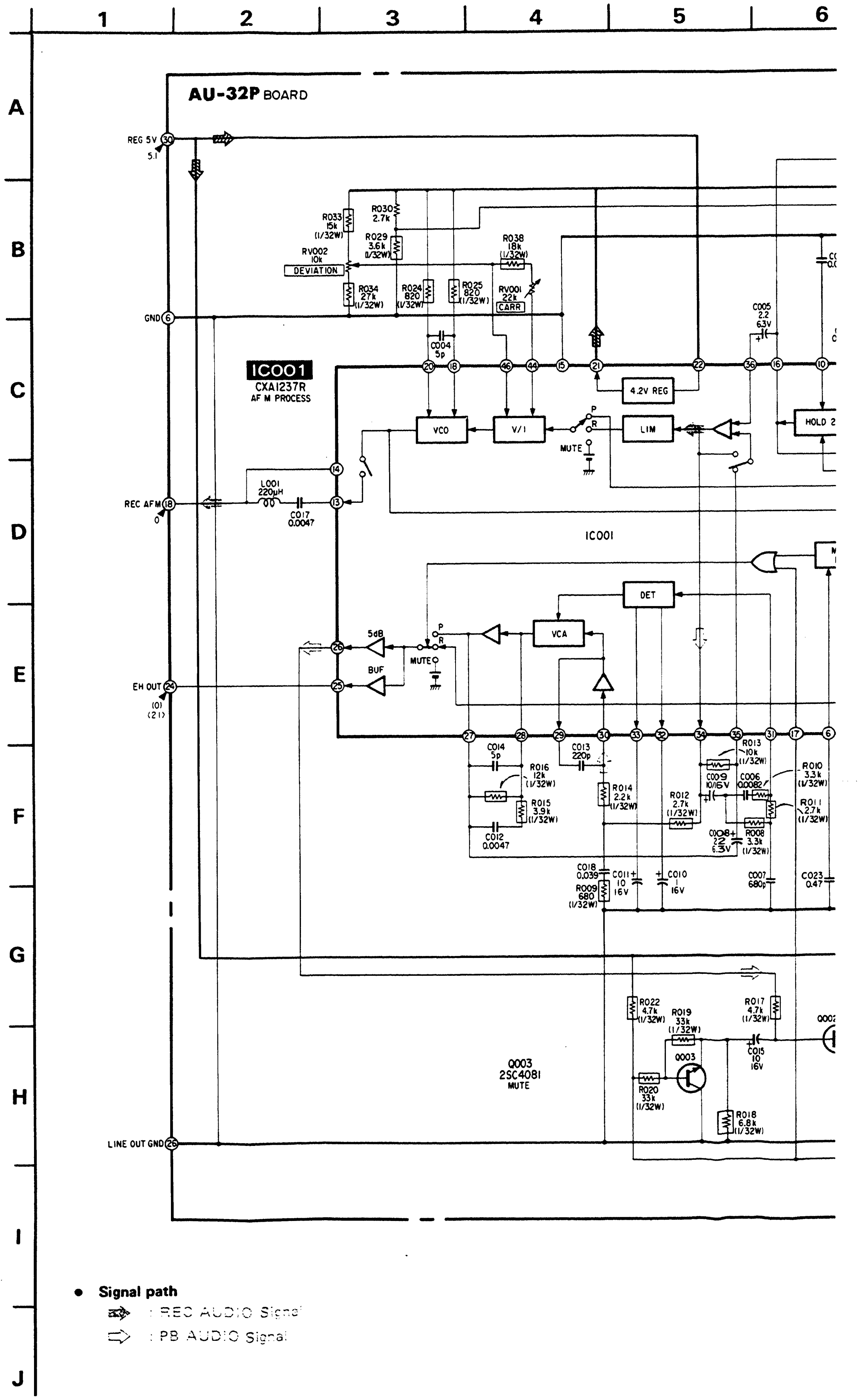

A
B
C
D
AUDIO LINE
LINE OUT
R016
R008
C014 5p
C009 10 16V
C010 1 16V
R003
R002 1.8k
C011 10 16V
R013
C008 22 6.3V
C033 0.01
R012
C016 470p
R020
C004 5p
C005 2.2 6.3V
R029
R030 2.2k
C019 0.0027
R009
L001 220μH
Q004
C030 0.01
R031
C018 0.039
C021 180p
C022 0.0018
C023 180p
C017 0.0047
R035
LOWPASS
REG
REC
RF
VA PB
PB
CAM/
1-622-935-

AU-32P BOARD (SIDE B)


E
F
G
H
I
1
2
3
4
5
6
R028
R027
RV002 LINE 10k
C020 0.004
C024 0.022
C027 0.0047
Q003
R019
C026 0.01
R034
C029 0.0027
R018
R022
R033
IC001
R040
C028 180p
R032
R017
R025
R038
R007
Q002
R015
C012 0.0047
RV001 22k
Q001
R001 82k
C006 0.0082
C001 100p
R004 4.7k
R005 470
R039 100
C013 220p
R010
C007 680p
C003 0.001
R011
AUDIO LINE
LINE OUT LINE
1-622-935-

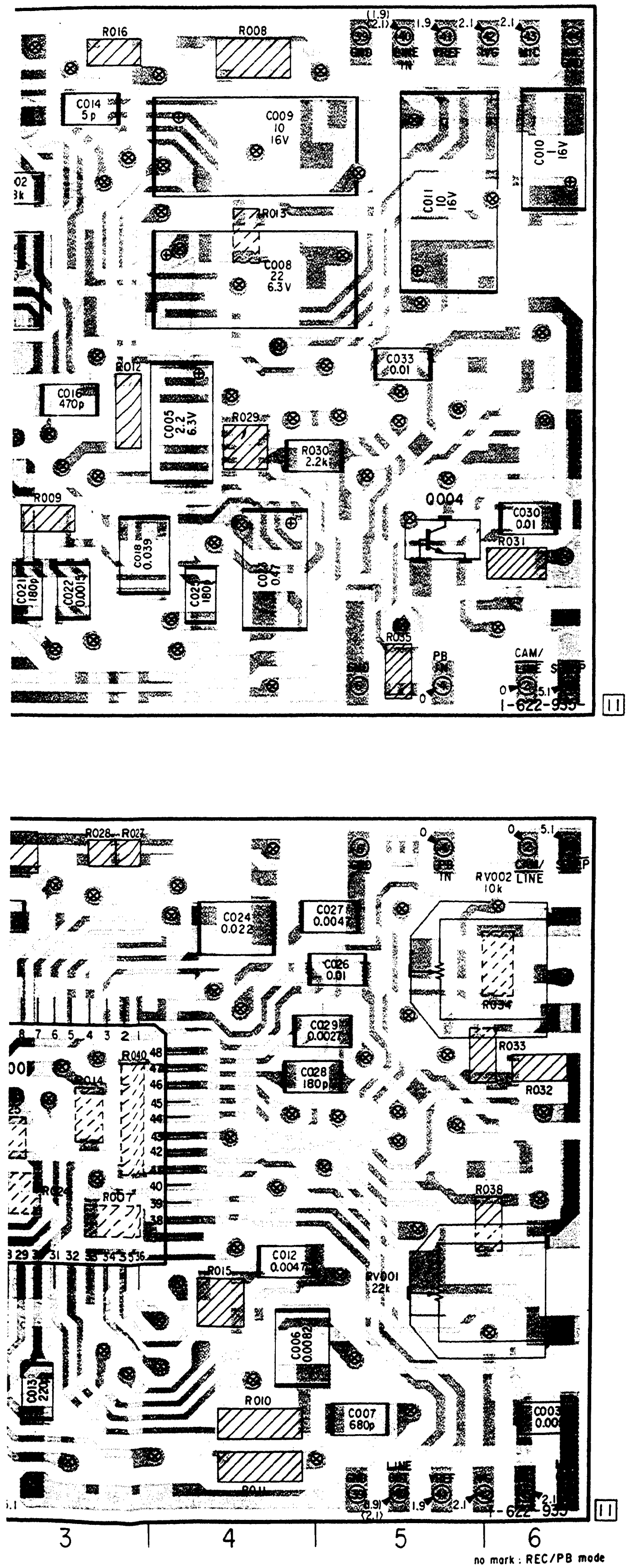
no mark : REC/PB mode
( ) : REC mode
< > : PB mode

AU-32P(AUDIO PROCESS) SCHEMATIC DIAGRAM


1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
AU-32P BOARD
REG 5V
GND
REC AFM
EH OUT
LINE OUT GND
IC001
CXA1237R
AF M PROCESS
DEVIATION
CARR
VCO
V/I
MUTE
4.2V REG
LIM
HOLD 2
IC001
DET
VCA
5dB
BUF
MUTE
L001 220μH
C017 0.0047
R033 15k
RV002 10k
R030 2.7k
R029 3.6k
R034 27k
R024 820
R025 820
R038 18k
RV001 22k
C004 5p
C005 22 6.3V
C014 5p
C013 220p
R016 12k
R015 3.9k
R014 2.2k
R012 2.7k
C012 0.0047
C018 0.039
R009 680
C011 10 16V
C010 1 16V
C009 10 16V
C006 0.0082
C008 22 6.3V
R008 3.3k
R013 10k
R010 3.3k
R011 2.7k
C007 680p
C023 0.47
R022 4.7k
R019 33k
R017 4.7k
Q003
2SC4081
MUTE
R020 33k
C015 10 16V
R018 6.8k

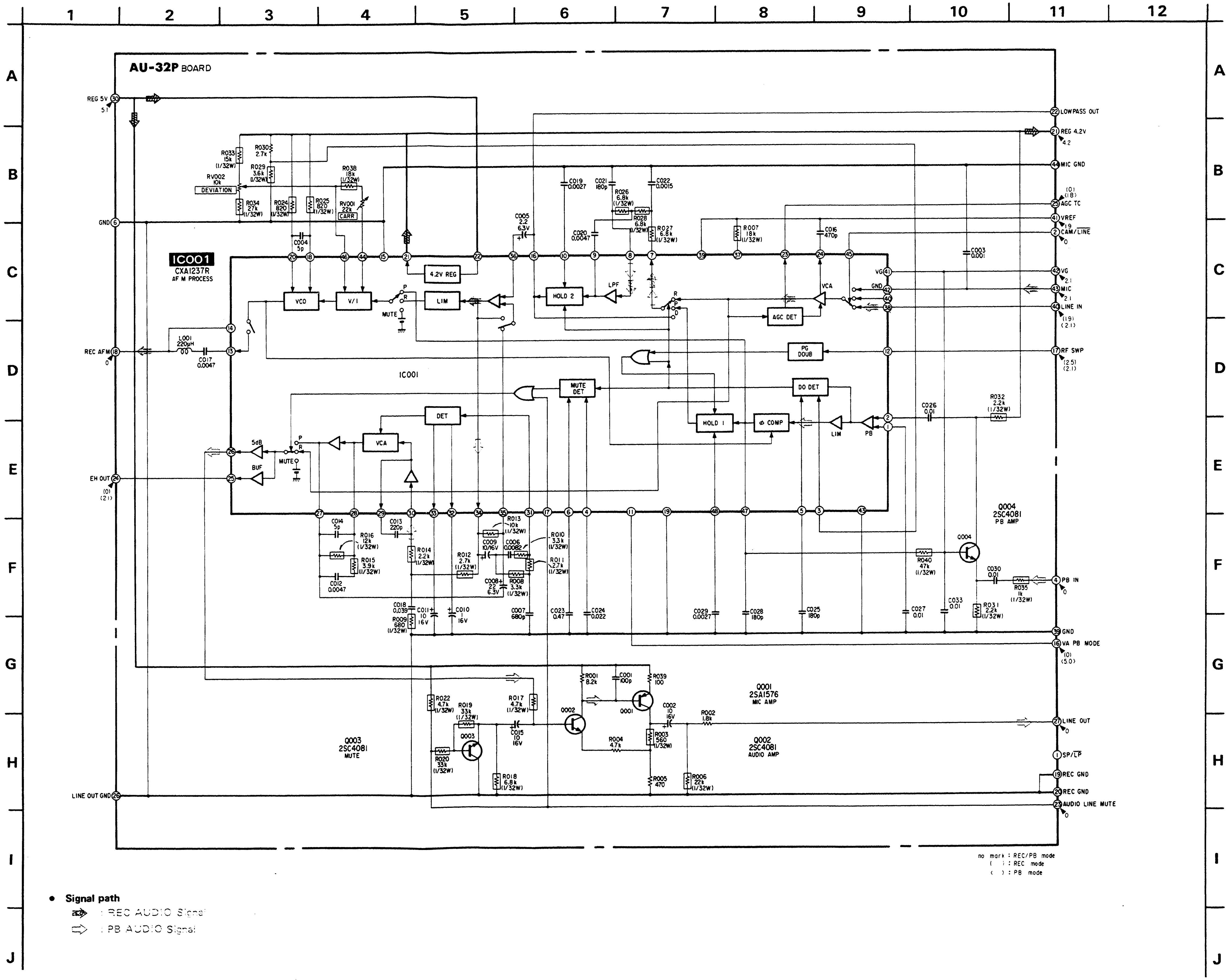
- **Signal path**
  : REC AUDIO Signal
  : PB AUDIO Signal

WIRING BOARD


R016
R008
C014 5p
C009 10 16V
C010 10 16V
C011 10 16V
R013
C008 22 6.3V
C033 0.01
C016 470p
R012
C005 2.2 6.3V
R029
R030 2.2k
Q004
C030 0.01
R031
R009
C018 0.039
C021 180p
C022 0.0015
C020
C023 0.47
R035
PB
CAM/LINE
1-622-935-
11
R026
R027
C024 0.022
C027 0.0047
C026 0.01
RV002 10k
LINE
R034
C029 0.0027
C028 180p
R033
R032
R040
R014
R007
R038
C012 0.0047
R015
RV001 22k
C006 0.0082
C013 220p
R010
C007 680p
R011
C003
3
4
5
6

no mark : REC/PB mode
( ) : REC mode
⟨ ⟩ : PB mode

AU-32P(AUDIO PROCESS) SCHEMATIC DIAGRAM

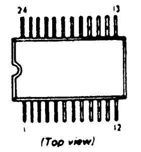

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
AU-32P BOARD
IC001
CXA1237R
AF M PROCESS
REG 5V
GND
REC AFM
EH OUT
LINE OUT GND
R033 15k (1/32W)
R030 2.7k
R029 3.6k (1/32W)
RV002 10k
DEVIATION
R034 27k (1/32W)
R024 820 (1/32W)
R025 820 (1/32W)
R038 18k (1/32W)
RV001 22k
CARR
C004 5p
L001 220µH
C017 0.0047
4.2V REG
VCO
V/I
LIM
MUTE
HOLD 2
LPF
C005 2.2 6.3V
C019 0.0027
C021 180p
R026 6.8k (1/32W)
C022 0.0015
R028 6.8k (1/32W)
R027 6.8k (1/32W)
C020 0.0047
R007 18k (1/32W)
C016 470p
C003 0.001
VCA
AGC DET
PG DOUB
DO DET
MUTE DET
HOLD 1
φ COMP
LIM
PB
DET
5dB
BUF
C026 0.01
R032 2.2k (1/32W)
C014 5p
R016 12k (1/32W)
R015 3.9k (1/32W)
C012 0.0047
C013 220p
R014 2.2k (1/32W)
R012 2.7k (1/32W)
R013 10k (1/32W)
C009 10/16V
C006 0.0082
R010 3.3k (1/32W)
R011 2.7k (1/32W)
C008 22 6.3V
R008 3.3k (1/32W)
C018 0.039
R009 680 (1/32W)
C011 10 16V
C010 10 16V
C007 680p
C023 0.47
C024 0.022
C029 0.0027
C028 180p
C025 180p
C027 0.01
C033 0.01
R040 47k (1/32W)
Q004
Q004 2SC4081 PB AMP
C030 0.01
R035 1k (1/32W)
R031 2.2k (1/32W)
R001 8.2k
C001 100p
R039 100
R022 4.7k (1/32W)
R019 33k (1/32W)
R017 4.7k (1/32W)
Q002
Q001
C002 10 16V
R002 1.8k
Q001 2SA1576 MIC AMP
Q002 2SC4081 AUDIO AMP
Q003
C015 10 16V
R004 4.7k
R003 560 (1/32W)
R020 33k (1/32W)
Q003 2SC4081 MUTE
R018 6.8k (1/32W)
R005 470
R006 22k (1/32W)
LOWPASS OUT
REG 4.2V
MIC GND
AGC TC
VREF
CAM/LINE
VG
MIC
LINE IN
RF SWP
PB IN
GND
VA PB MODE
LINE OUT
SP/LP
REC GND
REC GND
AUDIO LINE MUTE

no mark : REC/PB mode
( ) : REC mode
⟨ ⟩ : PB mode

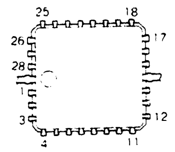
- Signal path
  ⇛ : REC AUDIO Signal
  ⇨ : PB AUDIO Signal

4-3. SEMICONDUCTORS

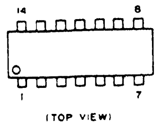
AN2510S
CX20114


24
13
1
12
(Top view)

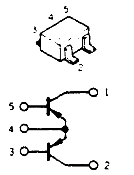
MC146805F2FPSC82533F


25
18
26
17
28
1
3
12
4
11

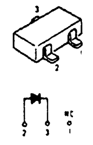
μPD4066BG


14
8
1
7
(TOP VIEW)

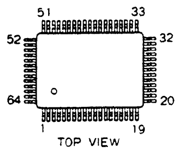
FMS1


4
5
1
3
2
5
4
3
1
2

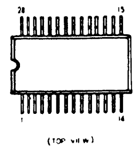
RD12M-B2
RD2.4M-B
RD5.6M-B2
RD9.1M-B1



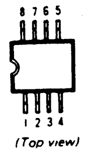
μPD7503G-714-12


51
33
52
32
64
20
1
19
TOP VIEW

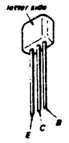
CXA1042M
CXD1030M
CX1042M


24
13
1
12
(TOP VIEW)

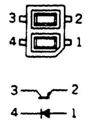
NJM4560M
TL062CPS
μPC358G2
μPC393G2


8 7 6 5
1 2 3 4
(Top view)

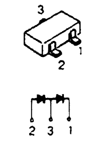
2SA1175


letter side
E
C
B

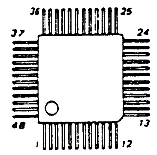
TLP907-0



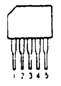
1SS123



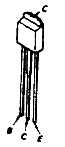
CXA1072Q
CXA1337Q


36
25
37
24
48
13
1
12

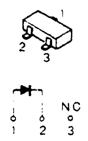
TA7060AP



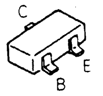
2SA1385



1SS187



DTA124EU
DTA143EK
DTA143EU
DTA144EK
DTA144WK
DTA144WU
DTC144EK
DTC144TK
DTC144WU
2SA1163
2SA1602
2SA812
2SA812-M5
2SB624-BV4
2SC1623
2SC1623-L7
2SC2757
2SC2757-T33
2SC4154



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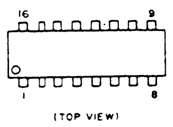
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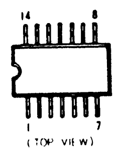
(TOP VIEW)

TC40H008F


14
8
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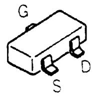
7
(TOP VIEW)

2SK300
2SK94
2SK94-X2



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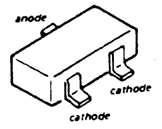
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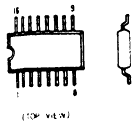
cathode
cathode

CX20115A
TA7733F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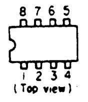
(TOP VIEW)

TL062ACPS
μPC4572G2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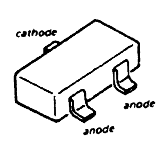
1 2 3 4
(Top view)

1S2837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anode
anode

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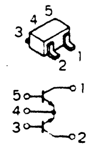
FMG2
FMW1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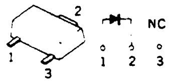
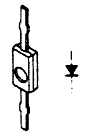
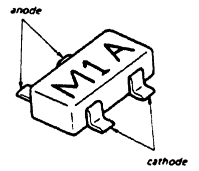
E10DS2
E10QS04



1T32-2



MA159


anode
M1A
cathode

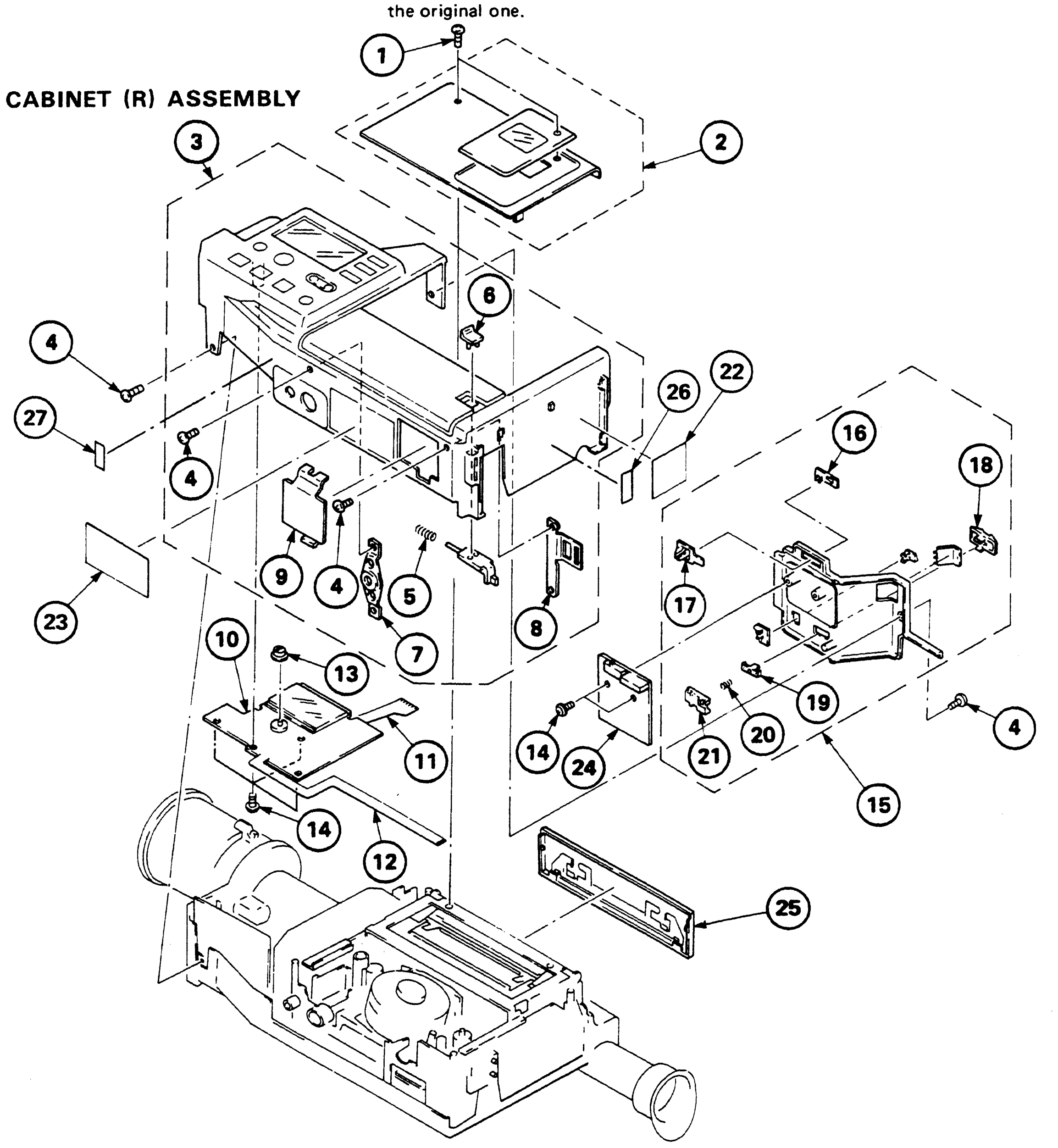
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-1. CABINET (R) ASSEMBLY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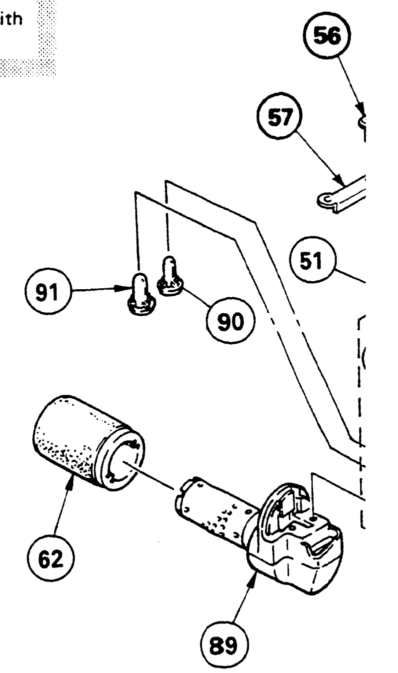
Ref.No	Part No.	Description	Remark
1	3-713-791-01	SCREW (M1.7X5), TAPPING, P2	
2	X-3713-994-1	LID ASSY, CASSETTE	
3	X-3713-992-1	CABINET (R) SUB ASSY	4-9
4	3-719-381-11	SCREW (M2X5)	
5	3-426-508-00	SPRING, COMPRESSION	
6	3-716-458-01	KNOB, BATTERY RELEASE	
7	3-718-231-01	SCREW, TRIPOD	
8	3-718-254-01	HOOK (A), STRAP	
9	*3-718-273-01	LID, BATTERY CASE	
10	*A-7061-491-A	FD-4P BOARD,COMPLETE	
11	1-622-947-11	FP-63 FLEXIBLE BOARD	
12	1-622-941-11	FP-75 FLEXIBLE BOARD	
13	3-719-825-31	KNOB, IRIS	
14	3-669-480-21	+ PTPWH 2	
15	X-3713-991-1	CABINET (UPPER) SUB ASSY	16-21
16	3-719-826-11	BUTTON, EJECT	
17	3-719-827-11	EJECT LOCK	
18	3-718-226-31	BUTTON, POWER	
19	3-718-257-01	PUSH BUTTON, POWER	
20	3-303-973-00	SPRING, COMPRESSION	
21	3-718-227-01	PLATE, BLIND, POWER	
22	*3-719-683-01	LABEL, BATTERY FITTING	
23	*3-727-178-01	LABEL, MODEL NUMBER (AEP)	
	*3-727-185-01	LABEL, MODEL NUMBER (E32) (E, AUS)	
24	*1-622-927-21	FK-4P BOARD	
25	X-3712-199-1	LID ASSY, LS	
26	*3-704-235-01	LABEL, CAUTION(UK)	
27	*2-359-729-02	LABEL, BEAB(UK)	

5-2. GRIP C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57
51
91
90
62
89

Ref.No	Part No
51	X-3713-
52	*2-277-4
53	3-718-2
54	3-718-2
55	3-718-2
56	3-669-4
57	*3-719-8
58	*A-7060-
59	*A-7061-
60	1-571-1
61	3-719-6
62	
63	3-719-6
64	3-719-6
65	X-3713-
66	3-718-2
67	*A-7085-
68	*1-622-9
69	3-719-8
70	3-719-6
71	*3-719-6

B2
-B
-B2
-B1

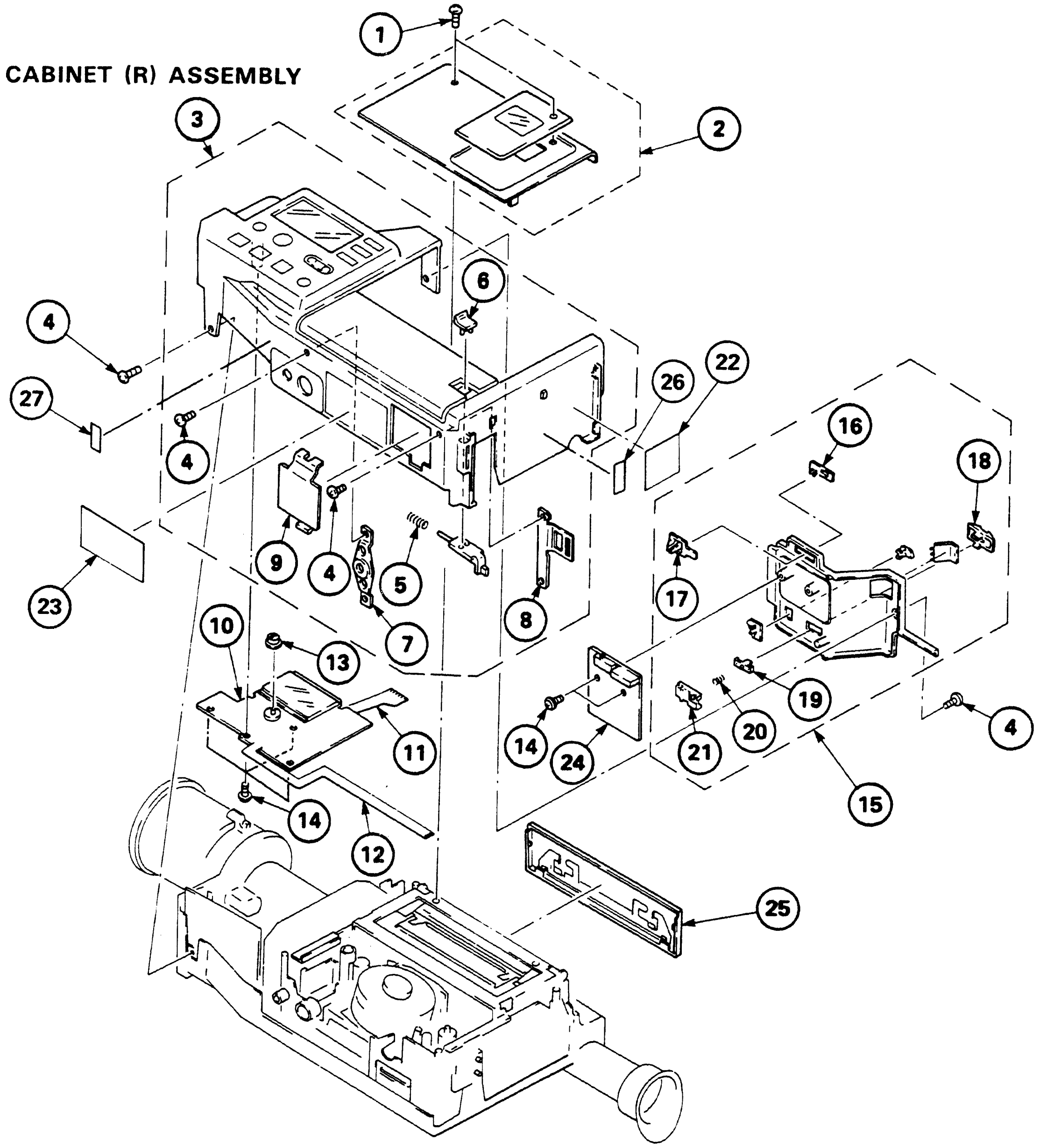
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

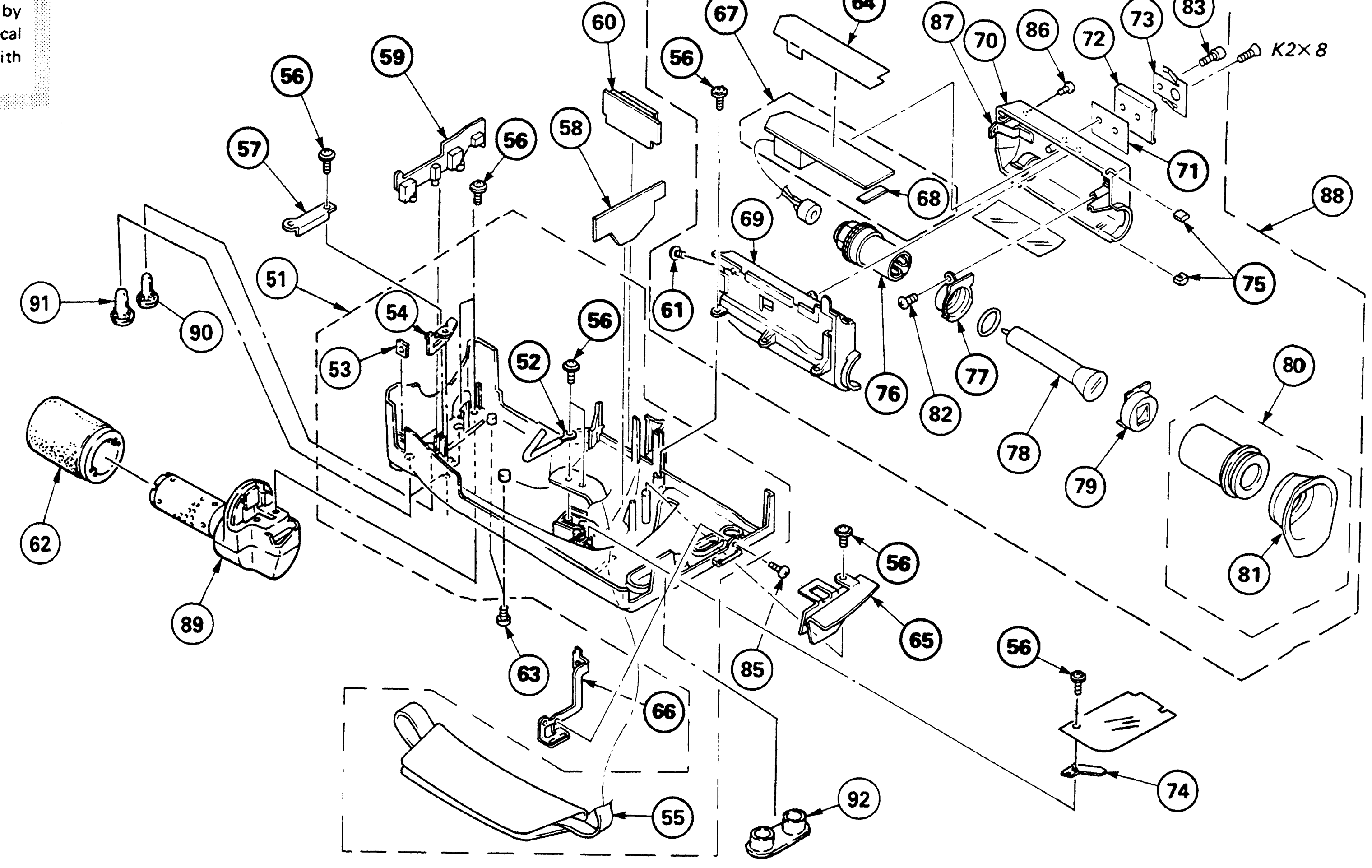
5-1. CABINET (R) ASSEMBLY



Ref.No	Part No.	Description	Remark
1	3-713-791-01	SCREW (M1.7X5), TAPPING, P2	
2	X-3713-994-1	LID ASSY, CASSETTE	
3	X-3713-992-1	CABINET (R) SUB ASSY	4-9
4	3-719-381-11	SCREW (M2X5)	
5	3-426-508-00	SPRING, COMPRESSION	
6	3-716-458-01	KNOB, BATTERY RELEASE	
7	3-718-231-01	SCREW, TRIPOD	
8	3-718-254-01	HOOK (A), STRAP	
9	*3-718-273-01	LID, BATTERY CASE	
10	*A-7061-491-A	FD-4P BOARD,COMPLETE	
11	1-622-947-11	FP-63 FLEXIBLE BOARD	
12	1-622-941-11	FP-75 FLEXIBLE BOARD	
13	3-719-825-31	KNOB, IRIS	
14	3-669-480-21	+ PTPWH 2	

Ref.No	Part No.	Description	Remark
15	X-3713-991-1	CABINET (UPPER) SUB ASSY	16-21
16	3-719-826-11	BUTTON, EJECT	
17	3-719-827-11	EJECT LOCK	
18	3-718-226-31	BUTTON, POWER	
19	3-718-257-01	PUSH BUTTON, POWER	
20	3-303-973-00	SPRING, COMPRESSION	
21	3-718-227-01	PLATE, BLIND, POWER	
22	*3-719-683-01	LABEL, BATTERY FITTING	
23	*3-727-178-01	LABEL, MODEL NUMBER (AEP)	
	*3-727-185-01	LABEL, MODEL NUMBER (E32) (E, AUS)	
24	*1-622-927-21	FK-4P BOARD	
25	X-3712-199-1	LID ASSY, LS	
26	*3-704-235-01	LABEL, CAUTION(UK)	
27	*2-359-729-02	LABEL, BEAB(UK)	

5-2. GRIP CABINET ,EVF ASSEMBLY

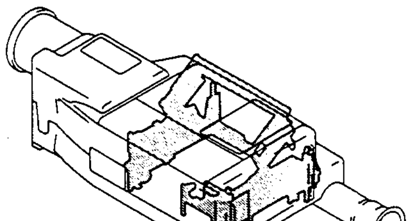


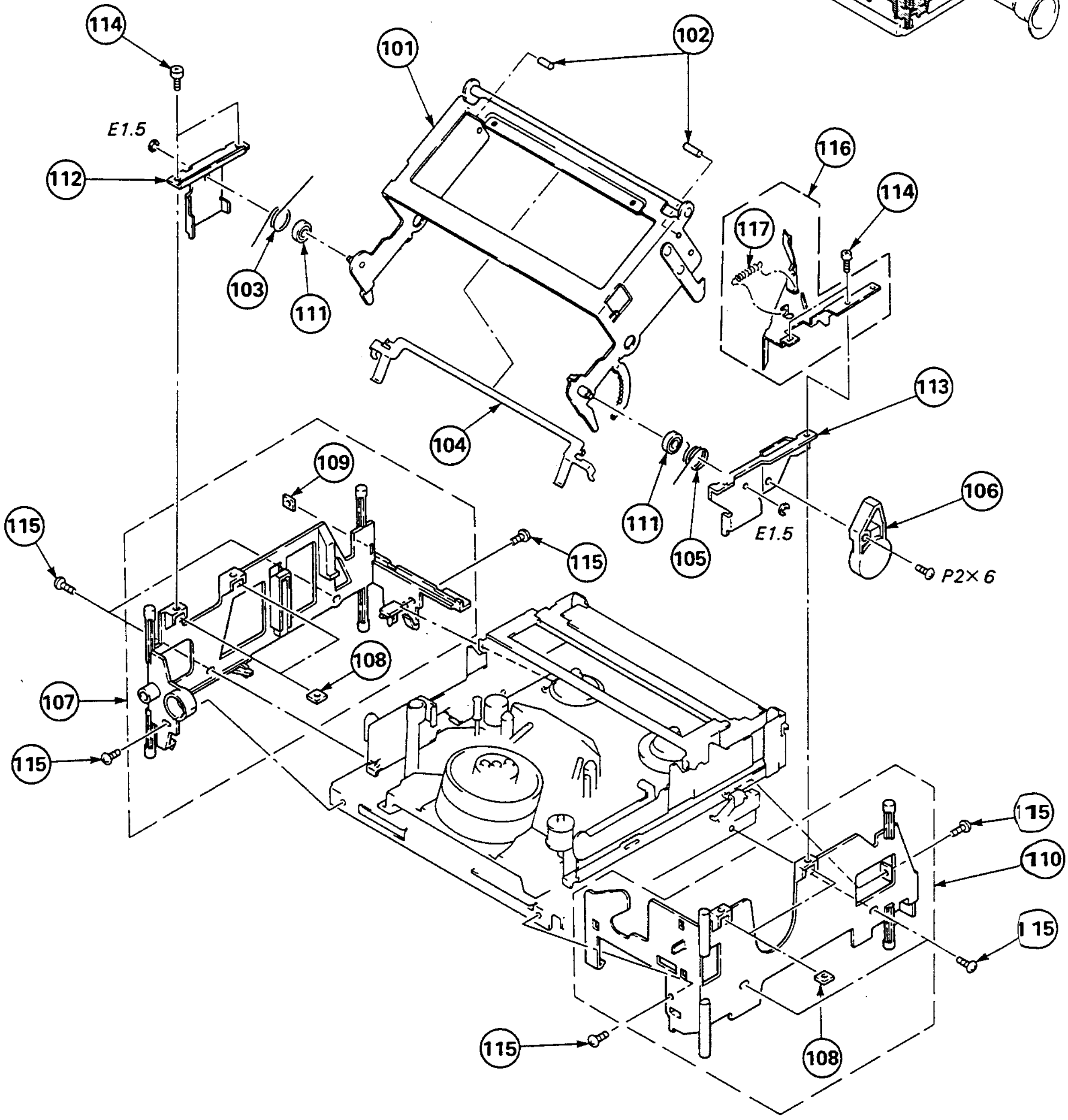
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark
51	X-3713-995-1	GRIP SUB ASSY, CABINET	52-56,84
52	*2-277-426-01	CLAMP	
53	3-718-233-01	NUT, PLATE	
54	3-718-265-01	STOPPER	
55	3-718-286-01	BELT, GRIP	
56	3-669-480-21	+ PTPWH 2	
57	*3-719-823-01	PROTECTOR, JACK	
58	*A-7060-937-A	SW-40P BOARD,COMPLETE	
59	*A-7061-490-A	MC-34 BOARD, COMPLETE	
60	1-571-100-11	SWITCH, PUSH (ZOOM)	
61	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
62		SCREEN, WIND	
63	3-719-694-01	SCREW (2.6X8), +B TAPPING (B)	
64	3-719-645-01	INSULATOR, VF	
65	X-3713-994-1	KNOB ASSY, SP	
66	3-718-283-01	HOOK (B), STRAP	
67	*A-7085-010-A	VF-9P BOARD,COMPLETE	68
68	*1-622-923-22	LD-8P BOARD	
69	3-719-803-01	CASE, VF	
70	3-719-640-01	CABINET, VF	
71	*3-719-672-01	INSULATOR, ACC	

Ref.No	Part No.	Description	Remark
72	3-688-985-01	SHOE, ACCESSORY	
73	3-688-940-01	SPRING, LEAF	
74	*3-719-849-01	PROTECTOR, SW	
75	3-719-629-01	CLIP	
76	⚠1-451-310-11	DEFLECTION YOKE (B/W) (L901)	
77	3-718-267-01	HOLDER (B), CRT	
78	⚠1-546-065-21	CATHODE-RAY TUBE B/W (V901)	
79	X-3712-159-1	HOLDER ASSY, CRT	
80	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	81
81	3-733-922-01	CUP, EYE	
82	3-719-843-01	SCREW (B2.6X8) (G), TAPPING	
83	3-678-103-31	SCREW, EVF STOPPER	
84	3-719-831-01	SCREW (M2X6)	
85	3-719-381-11	SCREW (M2X5)	
86	3-713-790-01	SCREW (M2X6), TAPPING, P3	
87	3-719-693-01	SUPPORT, VF	
88	A-7019-138-A	EVF ASSY	56,61,64,67, 69,70-73,75-83,85-87
89	1-542-122-11	MICROPHONE, ELECTRET CONDENSER	
90	3-728-266-01	COVER, 2.5 JACK (DC OUT)	
91	3-728-267-01	COVER, 3.5 JACK (MIC, EARPHONE JACK)	
92	3-728-268-01	COVER, JACK PLATE (AUDIO/VIDEO OUT)	

5-3. CASSETTE COMPARTMENT ASSEMBLY

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P2×6
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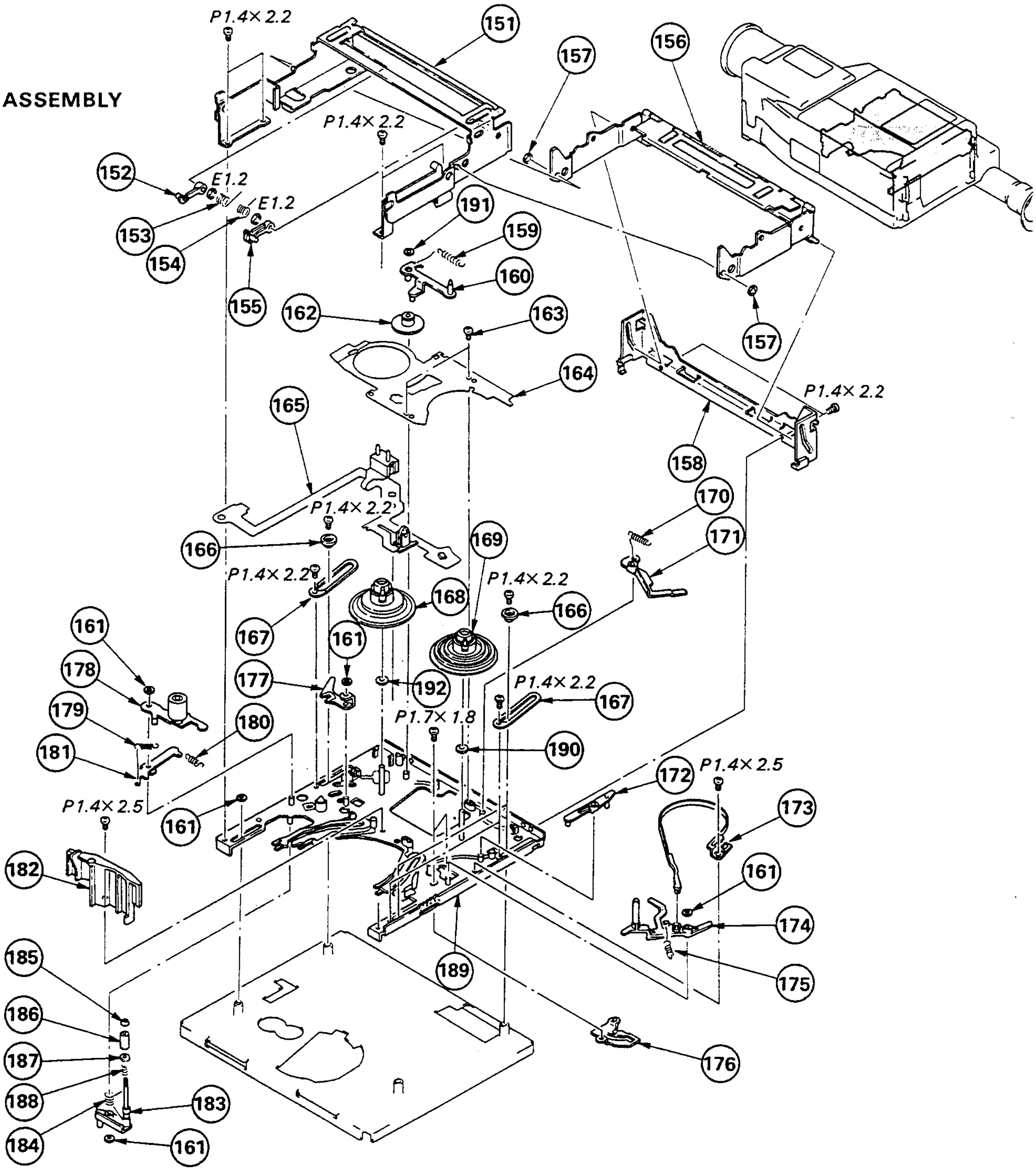
108

No.	Part No.	Description	Remark
101	X-3712-034-1	ARM ASSY (2), CASSETTE	102, 104
102	3-695-602-01	SHAFT, RIVETING, CASSETTE ARM	
103	3-695-582-01	SPRING, TORSION	
104	3-695-580-01	RETAINER, CASSETTE COMPARTMENT	
105	3-695-581-01	SPRING, TORSION	
106	3-719-604-01	DAMPER, OIL	
107	X-3712-143-1	FRAME (FRONT) ASSY	108, 109
108	3-716-418-01	NUT, FRAME PLATE	
109	3-718-233-01	NUT, PLATE	
110	X-3712-144-1	FRAME (REAR) ASSY	108
111	3-695-512-02	COLLAR, CASSETTE ARM	
112	*3-719-606-01	PLATE (T2) (M), SIDE	
113	*3-719-607-01	PLATE (S2) (M), SIDE	
114	3-719-697-01	SCREW (M1.7X5), SPECIAL HEAD	
115	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
116	X-3713-916-1	GUARD ASSY, TAPE	117
117	3-695-718-01	SPRING, TENSION	

5-4. LS ASSEMBLY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P1.4×2.2
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P1.4×2.2
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P1.4×2.2
P1.4×2.2
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P1.4×2.2
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P1.4×2.5
P1.4×2.5
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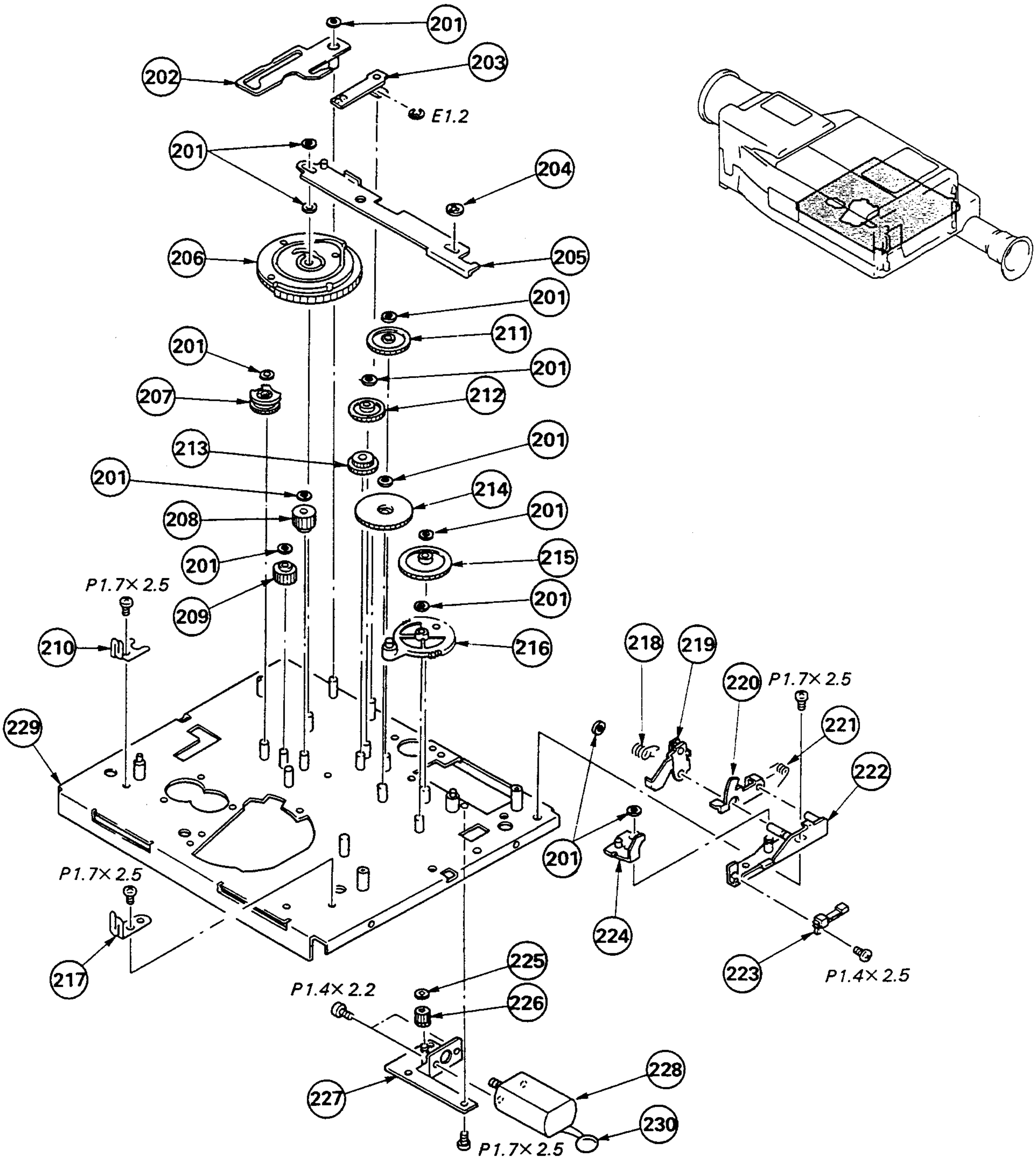
No.	Part No.	Description	Remark
151	X-3695-447-4	COMPARTMENT ASSY, CASSETTE, LS	
152	3-695-595-01	RETAINER (T), CASSETTE	
153	3-695-605-01	SPRING, TORSION	
154	3-695-604-01	SPRING, TORSION	
155	3-695-594-01	RETAINER (S), CASSETTE	
156	X-3695-448-3	ARM ASSY, BLIND	
157	3-669-465-00	WASHER (1.5), STOPPER	
158	3-695-646-01	ARM, LS	
159	3-695-718-01	SPRING, TENSION	
160	X-3712-037-1	LEVER (A) ASSY (2)	
161	3-315-384-31	WASHER, STOPPER	
162	X-3712-025-1	GEAR ASSY, TS	
163	3-699-402-01	SCREW (M1.3X5.5), TAPPING	
164	3-712-165-01	PLATE (2), STOPPER	
165	A-7060-693-A	FP-53 BOARD, COMPLETE	
166	3-695-698-01	GUIDE, LS	
167	3-695-697-01	SPRING, LEAF, LS	
168	X-3695-436-1	TABLE ASSY, REEL, TAKE-UP	
169	X-3712-038-1	TABLE ASSY (2), REEL, SUPPLY	
170	3-542-475-00	SPRING, TENSION	
171	3-712-151-01	BRAKE (2), SOFT	
172	3-695-735-01	ARM, TG1 RELEASE	
173	X-3695-432-1	BAND ASSY, TG1	
174	X-3712-019-1	ARM ASSY (2), TG1	
175	3-695-591-01	SPRING, TENSION	
176	3-695-733-01	PLATE, CAM, LS	
177	X-3712-022-1	ARM (B) ASSY (2), PINCH	
178	X-3712-032-2	ARM (C) ASSY (2), PINCH	
179	3-695-622-01	SPRING, TENSION	
180	3-695-719-01	SPRING, TENSION	
181	X-3695-415-1	PINCH LEVER ASSY	
182	3-695-624-01	BASE, PROTECT	
183	X-3712-027-1	ARM ASSY (2), TG7	
184	3-695-541-01	SPRING	
185	3-712-158-01	FLANGE, UPPER, TG7	
186	3-712-160-01	SLEEVE (2), TG7	
187	3-712-159-01	FLANGE, LOWER, TG7	
188	3-712-157-01	SPRING, COMPRESSION	
189	X-3712-035-1	CHASSIS ASSY (2), LS	
190	3-701-444-01	WASHER, 6	
191	3-321-393-01	WASHER, STOPPER	
192	3-701-441-01	WASHER	

5-5. CHASSIS ASSEMBLY (1)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P1.7×2.5
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P1.4×2.5
P1.4×2.2
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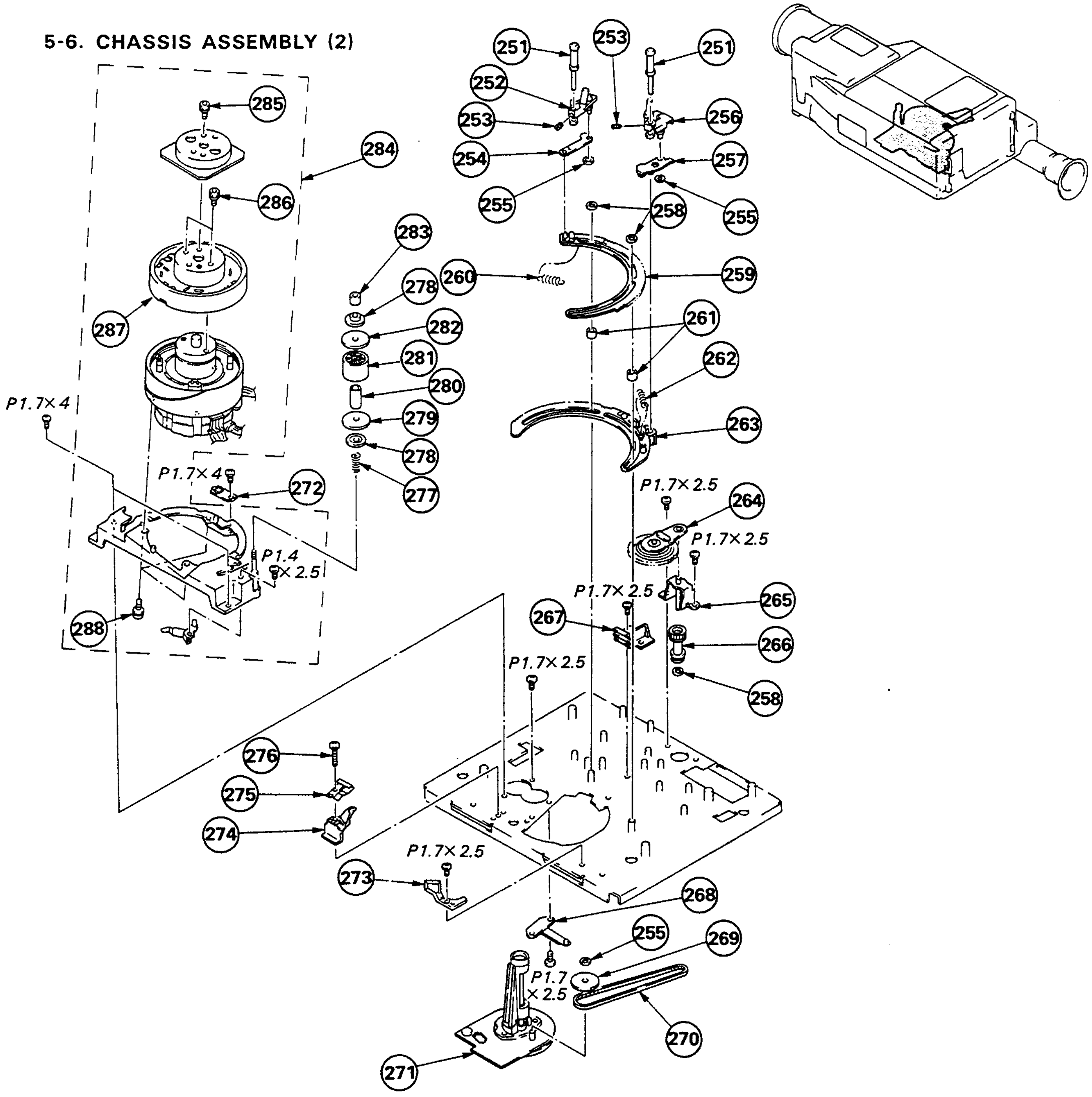
228
227
230
P1.7×2.5

No.	Part No.	Description	Remark
201	3-315-384-31	WASHER, STOPPER	
202	X-3712-023-1	ARM (A) ASSY (2), PINCH	
203	3-695-589-01	LEVER (B), REEL LOCK	
204	3-669-465-00	WASHER (1.5), STOPPER	
205	X-3695-439-1	SLIDER ASSY, M	
206	X-3712-031-1	CAM ASSY (2)	
207	3-712-156-01	GEAR (M) (2), THREADING	
208	3-695-537-01	GEAR (T), THREADING	
209	3-695-536-01	GEAR (S), THREADING	
210	*3-695-706-01	SPRING (T)	
211	3-695-559-01	GEAR (B), THREADING	
212	3-695-724-01	GEAR (D), THREADING	
213	3-712-162-02	GEAR (C) (2), THREADING	
214	3-695-714-01	GEAR (A), LS	
215	3-695-563-04	GEAR (B), LS	
216	X-3695-417-1	GEAR (C) ASSY, LS	
217	*3-695-705-01	SPRING (S)	
218	3-713-937-01	SPRING (A) (2)	
219	X-3695-418-1	ARM ASSY, LOCK	
220	3-695-574-01	ARM, RETURN PREVENTION	
221	3-695-579-01	SPRING (B), TORSION	
222	X-3712-018-1	BASE ASSY (2), LOCK	
223	1-553-226-00	SWITCH, LEAF (S902)	
224	X-3695-438-1	ARM ASSY, EJECT	
225	3-321-393-01	WASHER, STOPPER	
226	3-712-150-01	WHEEL, WORM	
227	X-3712-017-1	HOLDER ASSY, MOTOR	
228	1-541-508-11	MOTOR, DC (LA14-323F) (LOADING)	(M903)
229	X-3712-036-1	CHASSIS ASSY (2), MECHANICAL	
230	1-161-051-00	CAP, CERAMIC 0.01MF X	

5-6. CHASSIS ASSEMBLY (2)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P1.7×4
P1.7×4
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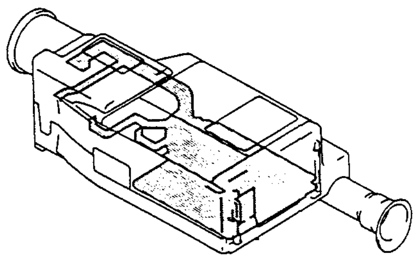
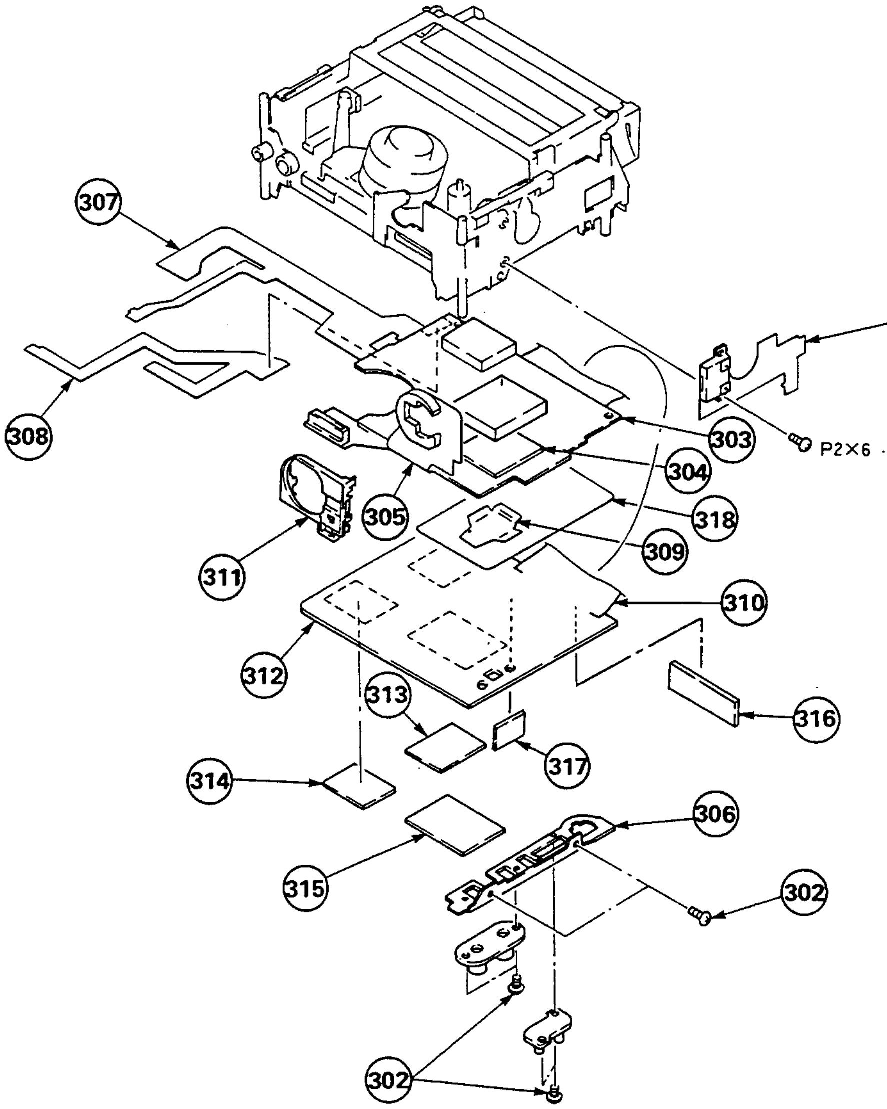
P1.4
×2.5
P1.7×2.5
264
P1.7×2.5
P1.7×2.5
265
267
266
288
P1.7×2.5
258
276
275
274
P1.7×2.5
273
268
255
269
P1.7
×2.5
270
271

No.	Part No.	Description	Remark
251	X-3712-029-1	ROLLER ASSY (2), GUIDE	
252	X-3712-030-1	BASE ASSY (2), TG5	
253	3-695-770-01	SCREW, GR LOCK	
254	3-695-545-01	JOINT, T	
255	3-321-393-01	WASHER, STOPPER	
256	X-3712-028-1	BASE ASSY (2), TG4	
257	X-3695-429-1	JOINT ASSY, S	
258	3-315-384-31	WASHER, STOPPER	
259	X-3695-414-1	SLIDER (T) ASSY, THREADING	
260	3-695-773-01	SPRING, TENSION	
261	3-695-544-01	ROLLER, GUIDE	
262	3-695-772-01	SPRING, TENSION	
263	X-3695-428-1	SLIDER (S) ASSY, THREADING	
264	X-3712-024-1	ARM ASSY (2), GEAR	
265	X-3712-020-1	BASE ASSY (2), MIDWAY PULLEY	
266	X-3712-021-1	PULLEY ASSY (2), MIDWAY	
267	3-712-163-01	SUPPORT (2), SLIDER	
268	1-535-574-11	TERMINAL, SHAFT GROUND	
269	X-3695-413-1	GEAR ASSY, CHANGE	
270	3-695-637-01	BELT, RELAY	
271	8-835-223-01	MOTOR, DC BHF-3301B (CAPSTAN) (M902)	
272	1-807-238-11	SENSOR, DEW CONDENSATION	
273	3-695-627-01	STOPPER, SLIDER, S	
274	3-695-628-01	STOPPER, SLIDER, T	
275	3-695-677-01	SPRING (T), LEAF	
276	3-695-519-01	SCREW, FITTING, LEAF SPRING(T)	
277	3-695-532-01	SPRING, COMPRESSION	
278	3-695-727-01	RETAINER, FLANGE, UPPER	
279	3-695-794-01	FLANGE, LOWER, TG2	
280	3-695-530-01	SLEEVE, TG2	
281	3-712-164-01	ROLLER (2), TG2	
282	3-695-528-01	FLANGE, TG2	
283	3-695-529-01	NUT, TG2	
284	A-7048-124-A	DRUM ASSY (DGU-27A-R)	285-288
285	3-686-422-01	WASHER (2X2.7), BOLT, HOLE	
286	3-686-403-01	SCREW (2X5), BOLT WASHER	
287	A-7049-143-A	DRUM ASSY, UPPER (DGR-27-R)	
288	3-686-444-02	SCREW +P 2X5.5	

5-7. MAIN BOARD ASSEMBLY

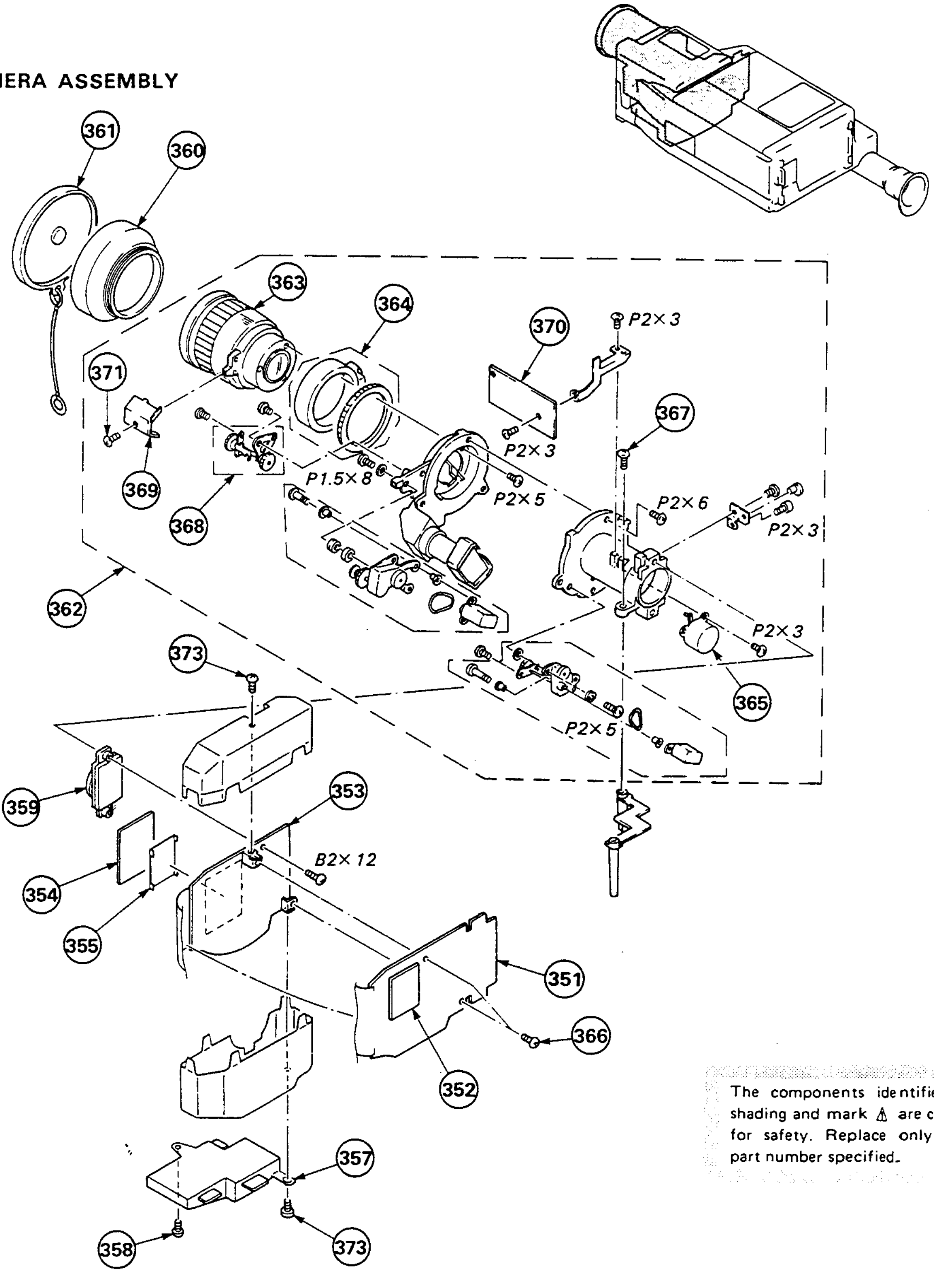




Ref.No	Part No.	Description	Remark
301	1-622-938-23	FP-70P FLEXIBILE BOARD	
302	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
303	*A-7060-920-A	SS-81 BOARD,COMPLETE	304,305
304	A-7068-081-A	RP-47P BOARD,COMPLETE(HIC)	
305	1-622-943-11	FP-57 FLEXIBLE BOARD	
306	*X-3712-198-1	HOLDER ASSY, VO	
307	1-622-945-11	FP-59 FLEXIBLE BOARD	
308	1-622-939-11	FP-71 FLEXIBLE BOARD	
309	1-622-940-11	FP-72 FLEXIBLE BOARD	

Ref.No	Part No.	Description	Remark
310	1-622-946-11	FP-60 FLEXIBLE BOARD	
311	3-718-274-11	COVER	
312	*A-7060-919-A	VA-36 BOARD,COMPLETE	313-315
313	A-7068-091-A	AU-32P BOARD,COMPLETE(HIC)	
314	A-7068-092-A	CC-10 BOARD,COMPLETE(HIC)	
315	A-7068-093-A	YP-8 BOARD,COMPLETE(HIC)	
316	*A-7060-922-A	AT-6 BOARD,COMPLETE	
317	*A-7060-923-A	NR-1 BOARD,COMPLETE	

5-8. CAMERA ASSEMBLY


361
360
363
364
370
P2×3
371
367
P2×3
369
P1.5×8
P2×5
P2×6
P2×3
368
362
P2×3
373
365
P2×5
359
353
B2×12
354
355
351
366
352
357
358
373

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark
351	*A-7060-926-A	VC-24P BOARD,COMPLETE	352
352	A-7068-094-A	CP-19P BOARD,COMPLETE(HIC)	
353	*A-7060-925-A	VC-23P BOARD,COMPLETE	354,356
354	A-7068-082-A	DT-62P BOARD,COMPLETE(HIC)	
355	*X-3712-160-1	PLATE ASSY, SHIELD, VC	
356	1-622-942-11	FP-54 FLEXIBLE BOARD	
357	⚠1-464-815-11	CONVERTER UNIT, DC-DC	
358	3-719-601-01	SCREW (B2X5), TAPPING	
359	8-750-011-32	IU024AK-12A CCD IMAGER	
360	3-718-235-41	HOOD, LENS	
361	3-719-348-01	CAP, HOOD	

Ref.No	Part No.	Description	Remark
362	1-547-242-21	LENS, ZOOM (VCL-1206YH)	363-365,367-371
363	3-707-552-01	RUBBER, FOCUS	
364	3-707-371-01	RING ASSY, ZOOM	
365	3-707-369-01	METER ASSY, EE	
366	3-719-696-02	SCREW(M2×3),SPECIAL HEAD	
367	3-719-843-01	SCREW (B2.6X8) (G), TAPPING	
368	3-707-370-01	GEAR ASSY, AF DRIVE	
369	3-719-687-01	COVER, GEAR	
370	*A-7060-961-A	AF-32 BOARD,COMPLETE	
371	3-719-845-01	SCREW(B2×4),TAPPING	

5-9. HARDWARE LIST

7-627-852-27	+P 1.7X3

SCREW

7-621-255-45	SCREW +P
7-621-772-60	SCREW +B
7-627-850-17	SCREW,PRECISION +P 1.4X2.5
7-627-552-07	SCREW,PRECISION +P 1.7X2.5
7-627-852-18	SCREW,PRECISION +P 1.7X4 TYPE3
7-627-852-38	SCREW,PRECISION +P1.7X1.8TYPE3
7-685-205-19	SCREW +KTP 2X8 TYPE2 NON-SLIT

STOP RING

7-624-101-01	STOP RING 1.2 (E TYPE)
7-624-102-04	STOP RING 1.5, TYPE -E

SECTION 6
ELECTRICAL PARTS LIST

FP-57 | NR-1 | AT-6

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X, mean standardized parts, so they may have some difference from the original one.
- SEMIDONDUCTORS
  In each case, U: μ, for example:
  UA. . .: μA. . ., UPA. . .: μPA. . ., UPB. . .: μPB. . ., UPC. . .: μPC. . ., UPD. . .: μPD. . .
- CAPACITORS
  MF: μF, PF: μμF
- COILS
  MMH: mH, UH: μH

Ref.No	Part No.	Description				Remark
	*1-622-943-11	FP-57 FLEXIBLE BOARD				

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	*1-550-104-32	HOLDER, BATTERY				

CONNECTOR

CN001	1-562-879-11	CONNECTOR, CARD EDGE 19P				
CN002	1-562-880-11	CONNECTOR, CARD EDGE 15P				

SWITCH

S953	1-570-870-11	SWITCH, SLIDE				

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*A-7060-923-A NR-1 BOARD, COMPLETE

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CAPACITOR

C101	1-163-120-00	CERAMIC CHIP	130PF	5%	50V	
C102	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C103	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C104	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C105	1-124-225-00	ELECT	100MF	20%	6.3V	
C106	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C107	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C108	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	
C109	1-163-035-00	CERAMIC CHIP	0.047MF		50V	

DIODE

D101	8-719-101-23	DIODE 1SS123				

IC

IC101	8-759-200-60	IC TA7060AP				

TRANSISTOR

Q101	8-729-100-67	TRANSISTOR 2SC1623				
Q102	8-729-100-67	TRANSISTOR 2SC1623				
Q103	8-729-900-99	TRANSISTOR DTA144WK				

RESISTOR

R101	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R102	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R103	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R104	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R105	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R106	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R107	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R108	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R109	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R110	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R111	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R112	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R114	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	

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*A-7060-922-A AT-6 BOARD, COMPLETE

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CAPACITOR

C001	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V	
C002	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V	
C003	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C004	1-163-139-00	CERAMIC CHIP	820PF	5%	50V	
C005	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V	
C006	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V	
C007	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V	
C008	1-162-974-11	CERAMIC CHIP	0.01MF		50V	
C009	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C010	1-163-145-00	CERAMIC CHIP	0.0015MF	5%	50V	
C011	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C012	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C013	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V	
C014	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V	
C015	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C016	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	

IC

IC001	8-759-928-56	IC CXA1042M				

COIL

L001	1-410-389-11	INDUCTOR CHIP 47UH				
L002	1-410-656-21	INDUCTOR CHIP 150UH				

TRANSISTOR

Q001	8-729-100-76	TRANSISTOR 2SA812				
Q002	8-729-100-76	TRANSISTOR 2SA812				

RESISTOR

R001	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R002	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R003	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R004	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R005	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R006	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R007	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R008	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R009	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R010	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R011	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

Ref.No	Part No.	Description			Remark
R012	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R013	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R014	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R015	1-216-103-00	METAL GLAZE	180K	5%	1/10W

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*A-7060-920-A SS-81 BOARD, COMPLETE
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A-7068-081-A RP-47P BOARD, COMPLETE

*1-622-939-11 FP-71 FLEXIBLE BOARD
*1-622-945-11 FP-59 FLEXIBLE BOARD
*1-622-946-11 FP-60 FLEXIBLE BOARD
*3-718-223-01 HOLDER, TE

CAPACITOR

Ref.No	Part No.	Description			Remark
C001	1-124-224-00	ELECT	47MF	20%	6.3V
C002	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C003	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C004	1-124-245-00	ELECT	4.7MF	20%	16V
C005	1-124-225-00	ELECT	100MF	20%	6.3V
C006	1-162-638-11	CERAMIC CHIP	1MF		16V
C007	1-162-638-11	CERAMIC CHIP	1MF		16V
C010	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C011	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C012	1-135-099-00	TANTAL CHIP	2.2MF	20%	6.3V
C013	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C014	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C015	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C016	1-124-462-00	ELECT	10MF	20%	6.3V
C017	1-124-462-00	ELECT	10MF	20%	6.3V
C018	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C019	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C020	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C021	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C022	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C023	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C024	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C025	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C026	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C027	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C028	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C029	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C031	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C201	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C202	1-124-577-11	ELECT	82MF	20%	10V
C203	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C204	1-124-577-11	ELECT	82MF	20%	10V
C205	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C206	1-124-577-11	ELECT	82MF	20%	10V
C207	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C208	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C211	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C212	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C213	1-124-462-00	ELECT	10MF	20%	16V
C214	1-124-462-00	ELECT	10MF	20%	16V
C215	1-127-506-00	ELECT(SOLID)	1MF	20%	25V
C216	1-162-638-11	CERAMIC CHIP	1MF		16V
C217	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C218	1-124-258-00	ELECT	3.3MF	20%	25V
C219	1-124-462-00	ELECT	10MF	20%	16V
C220	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C221	1-124-462-00	ELECT	10MF	20%	16V
C222	1-135-099-00	TANTAL CHIP	2.2MF	20%	6.3V
C223	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C224	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C225	1-124-596-11	ELECT	27MF	20%	16V
C226	1-124-596-11	ELECT	27MF	20%	16V
C227	1-124-596-11	ELECT	27MF	20%	16V
C228	1-124-236-00	ELECT	47MF	20%	16V
C301	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C302	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C303	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C304	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C305	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C306	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C307	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C308	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C309	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C310	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V

When indicating parts by reference number, please include the board name.

CONNECTOR

Ref.No	Part No.	Description
CN001	*1-564-014-00	PIN, CONNECTOR 4P
CN002	*1-564-014-00	PIN, CONNECTOR 4P
CN003	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P
CN301	1-566-529-11	CONNECTOR, FPC (ZIF) 13P
CN302	*1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P

DIODE

Ref.No	Part No.	Description
D001	8-719-100-05	DIODE IS2837
D002	8-719-801-45	DIODE 1SS187
D003	8-719-404-12	DIODE MA159
D004	8-719-404-12	DIODE MA159
D005	8-719-801-45	DIODE 1SS187
D006	8-719-105-28	DIODE RD2.4M-B
D007	8-719-100-03	DIODE 1S2835
D009	8-719-801-45	DIODE 1SS187
D208	8-719-200-36	DIODE E10QS04
D209	8-719-200-36	DIODE E10QS04
D223	8-719-200-27	DIODE E10DS2

IC

Ref.No	Part No.	Description
IC001	8-759-140-32	IC UPD78112GF
IC002	8-759-112-71	IC UPD7564G
IC003	8-759-207-00	IC TA7733F
IC004	8-759-100-94	IC UPC358G2
IC005	8-759-940-79	IC S-81350AG
IC220	8-759-202-45	IC CX20114
IC221	8-759-107-68	IC CX20115A
IC222	8-752-003-60	IC CX20036

COIL

Ref.No	Part No.	Description
L001	1-410-381-11	INDUCTOR CHIP 10UH
L205	1-410-627-11	COIL, CHOKE 100UH
L206	1-421-983-11	COIL, CHOKE 700UH
L207	1-421-983-11	COIL, CHOKE 700UH
L211	1-410-389-11	INDUCTOR CHIP 47UH
L301	1-408-777-00	INDUCTOR CHIP 10UH
L302	1-408-793-21	INDUCTOR CHIP 220UH

PHOTOSENSOR

Ref.No	Part No.	Description
PH001	8-729-905-07	PT480FI
PH002	8-729-905-07	PT480FI

TRANSISTOR

Ref.No	Part No.	Description
Q001	8-729-902-96	TRANSISTOR FMS1
Q002	8-729-903-10	TRANSISTOR FMW1
Q004	⚠ 8-729-105-29	TRANSISTOR 2SA1385
Q005	8-729-602-21	TRANSISTOR 2SC4154

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark
Q006	⚠8-729-805-25	TRANSISTOR 2SB1121	
Q007	⚠8-729-805-25	TRANSISTOR 2SB1121	
Q009	8-729-901-06	TRANSISTOR DTA144EK	
Q010	8-729-805-25	TRANSISTOR 2SB1121	
Q011	8-729-805-25	TRANSISTOR 2SB1121	
Q012	8-729-904-07	TRANSISTOR FMG2	
Q013	8-729-902-96	TRANSISTOR FMS1	
Q014	8-729-901-47	TRANSISTOR DTA143EK	
Q015	8-729-903-10	TRANSISTOR FMW1	
Q016	8-729-903-10	TRANSISTOR FMW1	
Q017	8-729-602-36	TRANSISTOR 2SA1602	
Q018	8-729-905-57	TRANSISTOR DTA124EU	
Q019	8-729-901-06	TRANSISTOR DTA144EK	
Q020	⚠8-729-106-40	TRANSISTOR 2SB1114	
Q021	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q022	8-729-905-45	TRANSISTOR DTA143EU	
Q023	8-729-901-01	TRANSISTOR DTC144EK	
Q024	8-729-905-12	TRANSISTOR DTA144EU	
Q025	8-729-904-07	TRANSISTOR FMG2	
Q203	8-729-805-25	TRANSISTOR 2SB1121	
Q204	8-729-805-25	TRANSISTOR 2SB1121	
Q216	8-729-901-06	TRANSISTOR DTA144EK	
Q217	8-729-904-07	TRANSISTOR FMG2	
Q218	8-729-602-36	TRANSISTOR 2SA1602	
Q219	8-729-904-07	TRANSISTOR FMG2	
Q302	8-729-117-54	TRANSISTOR 2SA1175	
Q303	8-729-100-76	TRANSISTOR 2SA812	

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R002	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R003	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R004	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R006	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R007	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R008	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R009	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R010	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R011	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R012	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R013	⚠1-216-170-91	METAL GLAZE	68	5%	1/8W	
R014	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R015	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R016	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R017	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R018	⚠1-216-033-91	METAL GLAZE	220	5%	1/10W	
R019	⚠1-216-033-91	METAL GLAZE	220	5%	1/10W	
R020	1-216-172-00	METAL GLAZE	82	5%	1/8W	
R024	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R025	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R026	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R027	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R029	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R030	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R031	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R032	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R033	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R034	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R035	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R036	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R037	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R039	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R040	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R041	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R042	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R043	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R045	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R046	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R047	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R048	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R049	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R050	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R051	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R052	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R053	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R054	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R055	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R056	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R057	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R058	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R059	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R060	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R061	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R062	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R065	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R066	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R067	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R068	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R069	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R070	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R071	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R072	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R073	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R074	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R075	⚠1-216-170-91	METAL GLAZE	68	5%	1/8W	
R076	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R077	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R078	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R079	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R080	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R081	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R082	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R083	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R084	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R085	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R086	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R087	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R089	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R090	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R201	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R202	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R204	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R211	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R212	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R213	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R214	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R215	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R216	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R217	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R218	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R219	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R220	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R221	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R222	1-216-302-00	METAL GLAZE	2.7	5%	1/10W	
R223	1-216-302-00	METAL GLAZE	2.7	5%	1/10W	
R224	1-216-302-00	METAL GLAZE	2.7	5%	1/10W	
R225	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R226	1-214-972-00	METAL	0.22	1%	1/4W	
R227	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R228	1-216-037-00	METAL GLAZE	330	5%	1/10W	

When indicating parts by reference number, please include the board name.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description			Remark
R229	1-216-041-00	METAL GLAZE	470	5%	1/10W
R230	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R301	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R302	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R304	1-216-009-00	METAL GLAZE	22	5%	1/10W
R305	1-216-043-00	METAL GLAZE	560	5%	1/10W
R306	1-216-037-00	METAL GLAZE	330	5%	1/10W
R307	1-216-041-00	METAL GLAZE	470	5%	1/10W
R308	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R309	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R310	1-216-296-00	METAL GLAZE	0	5%	1/8W
R311	1-216-296-00	METAL GLAZE	0	5%	1/8W

TESTPOINT

TP002	*1-535-622-11	PIN, TERMINAL
TP004	*1-535-622-11	PIN, TERMINAL
TP005	*1-535-622-11	PIN, TERMINAL
TP006	*1-535-622-11	PIN, TERMINAL
TP007	*1-535-622-11	PIN, TERMINAL
TP008	*1-535-622-11	PIN, TERMINAL
TP010	*1-535-622-11	PIN, TERMINAL

CRYSTAL

X001	1-567-885-11	VIBRATOR, CRYSTAL 12MHz
X002	1-567-884-11	OSCILLATOR, CERAMIC 700KHz

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*A-7060-919-A VA-36 BOARD, COMPLETE
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A-7068-091-A AU-32P, BOARD, COMPLETE (HIC)
A-7068-092-A CC-10, BOARD, COMPLETE (HIC)
A-7068-093-A YP-8, BOARD, COMPLETE (HIC)

CAPACITOR

Ref.No	Part No.	Description			Remark
C251	1-124-638-11	ELECT	22MF	20%	10V
C252	1-124-279-11	ELECT	3.3MF	20%	25V
C331	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C332	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C333	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C334	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C335	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C336	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C337	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C338	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C339	1-163-145-00	CERAMIC CHIP	0.0015MF	5%	50V
C340	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C341	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C342	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C343	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C344	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C345	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C346	1-163-089-00	CERAMIC CHIP	6PF	0.25PF	50V
C347	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C348	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C349	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C350	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C351	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C352	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V
C353	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C354	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C355	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C356	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C357	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C359	1-124-442-00	ELECT	330MF	20%	6.3V
C360	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C361	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C362	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C363	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C364	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C365	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C366	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C367	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C368	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C369	1-124-229-00	ELECT	33MF	20%	6.3V
C370	1-124-462-00	ELECT	10MF	20%	10V
C371	1-124-222-00	ELECT	22MF	20%	6.3V
C372	1-124-222-00	ELECT	22MF	20%	6.3V
C373	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C374	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C375	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C376	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C377	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C380	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C381	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C382	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C391	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C392	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C393	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C394	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C395	1-124-462-00	ELECT	10MF	20%	10V
C396	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C397	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C398	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C399	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C400	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C404	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C405	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C406	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C408	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C409	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C410	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C411	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C412	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C413	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C414	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C415	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C416	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C490	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C491	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C492	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C493	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C494	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C496	1-124-225-00	ELECT	100MF	20%	6.3V
C497	1-124-225-00	ELECT	100MF	20%	6.3V
C501	1-124-224-00	ELECT	47MF	20%	6.3V
C502	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C503	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C504	1-124-225-00	ELECT	100MF	20%	6.3V
C505	1-124-225-00	ELECT	100MF	20%	6.3V
C507	1-135-096-21	TANTAL CHIP	4.7MF	20%	10V
C508	1-124-222-00	ELECT	22MF	20%	6.3V
C510	1-135-099-00	TANTAL CHIP	2.2MF	20%	6.3V
C511	1-124-225-00	ELECT	100MF	20%	6.3V
C512	1-124-229-00	ELECT	33MF	20%	6.3V
C513	1-135-083-00	TANTAL CHIP	0.47MF	20%	25V
C514	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V

CONNECTOR

CN001	*1-566-098-11	PIN, BOARD TO BOARD 14P

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
CN002	*1-566-091-11	PIN, BOARD TO BOARD 6P	
CN004	*1-563-467-11	SOCKET, SMALL TYPE 5P	
CN332	*1-537-087-11	JACK BOARD	
CN333	*1-564-003-00	PIN, CONNECTOR 4P	
CN501	*1-564-001-11	PIN, CONNECTOR 2P	
CN502	*1-564-002-00	PIN, CONNECTOR 3P	

VARIABLE CAPACITOR

Ref.No	Part No.	Description	Remark
CV331	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P	
CV332	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P	
CV333	1-141-311-11	CAP, VAR, TRIMMER (CHIP) 20P	
CV334	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P	

DIODE

Ref.No	Part No.	Description	Remark
D331	8-719-106-71	DIODE RD12M-B2	
D332	8-719-106-71	DIODE RD12M-B2	
D333	8-719-105-91	DIODE RD5.6M-B1	
D334	8-719-105-45	DIODE RD3.3M-B1	
D335	8-719-101-23	DIODE 1SS123	
D336	8-719-105-45	DIODE RD3.3M-B1	
D338	8-719-100-05	DIODE 1S2837	
D339	8-719-106-43	DIODE RD9.1M-B1	
D340	8-719-106-43	DIODE RD9.1M-B1	
D341	8-719-106-43	DIODE RD9.1M-B1	
D342	8-719-106-43	DIODE RD9.1M-B1	
D343	8-719-106-43	DIODE RD9.1M-B1	
D344	8-719-105-40	DIODE RD3.0M-B2	
D501	8-719-106-71	DIODE RD12M-B2	

DELAY LINE

Ref.No	Part No.	Description	Remark
DL331	1-415-517-21	DELAY LINE, DUAL 1H-2H	

FILTER

Ref.No	Part No.	Description	Remark
FL251	1-235-612-21	BPF	
FL252	1-235-611-21	BPF	
FL331	1-409-394-11	TRAP, CHROMA EMPHASIS	
FL332	1-235-632-11	BPF	
FL333	1-235-633-11	BPF	
FL501	1-235-398-11	BPF	

IC

Ref.No	Part No.	Description	Remark
IC331	8-759-745-64	IC NJM4560M	
IC332	8-759-204-51	IC TC40H008F	
IC333	8-759-112-72	IC UPD6142G-101	

COIL

Ref.No	Part No.	Description	Remark
L331	1-410-389-11	INDUCTOR CHIP 47UH	
L332	1-410-377-11	INDUCTOR CHIP 4.7UH	
L333	1-408-795-21	INDUCTOR CHIP 330UH	
L334	1-410-167-41	INDUCTOR CHIP 820UH	
L335	1-410-657-21	INDUCTOR CHIP 180UH	
L336	1-408-783-00	INDUCTOR CHIP 33UH	
L337	1-410-381-11	INDUCTOR CHIP 10UH	
L338	1-410-380-21	INDUCTOR CHIP 8.2UH	
L339	1-408-785-21	INDUCTOR CHIP 47UH	
L340	1-410-389-11	INDUCTOR CHIP 47UH	
L341	1-410-389-11	INDUCTOR CHIP 47UH	
L342	1-410-389-11	INDUCTOR CHIP 47UH	
L343	1-408-776-00	INDUCTOR CHIP 8.2UH	
L344	1-408-777-00	INDUCTOR CHIP 10UH	
L345	1-410-369-11	INDUCTOR CHIP 1UH	
L346	1-410-369-11	INDUCTOR CHIP 1UH	
L348	1-410-388-21	INDUCTOR CHIP 39UH	
L349	1-410-386-11	INDUCTOR CHIP 27UH	
L350	1-410-656-21	INDUCTOR CHIP 150UH	
L351	1-410-657-21	INDUCTOR CHIP 180UH	
L352	1-410-389-11	INDUCTOR CHIP 47UH	
L353	1-410-393-11	INDUCTOR CHIP 100UH	
L354	1-410-656-21	INDUCTOR CHIP 150UH	
L355	1-410-656-21	INDUCTOR CHIP 150UH	
L357	1-410-385-11	INDUCTOR CHIP 22UH	
L358	1-410-390-11	INDUCTOR CHIP 56UH	
L361	1-408-796-41	INDUCTOR CHIP 390UH	
L363	1-410-381-11	INDUCTOR CHIP 10UH	

When indicating parts by reference number, please include the board name.

COIL

Ref.No	Part No.	Description	Remark
LV331	1-404-594-11	COIL, VARIABLE 10UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q251	8-729-109-42	TRANSISTOR 2SK94-X2	
Q252	8-729-905-15	TRANSISTOR DTC144WU	
Q331	8-729-602-21	TRANSISTOR 2SC4154	
Q332	8-729-602-21	TRANSISTOR 2SC4154	
Q333	8-729-602-21	TRANSISTOR 2SC4154	
Q334	8-729-602-21	TRANSISTOR 2SC4154	
Q335	8-729-602-21	TRANSISTOR 2SC4154	
Q336	8-729-905-15	TRANSISTOR DTC144WU	
Q337	8-729-905-09	TRANSISTOR DTA144WU	
Q339	8-729-602-21	TRANSISTOR 2SC4154	
Q340	8-729-905-15	TRANSISTOR DTC144WU	
Q341	8-729-602-21	TRANSISTOR 2SC4154	
Q342	8-729-905-15	TRANSISTOR DTC144WU	
Q343	8-729-602-21	TRANSISTOR 2SC4154	
Q346	8-729-905-09	TRANSISTOR DTA144WU	
Q347	8-729-602-21	TRANSISTOR 2SC4154	
Q348	8-729-602-21	TRANSISTOR 2SC4154	
Q349	8-729-602-21	TRANSISTOR 2SC4154	
Q350	8-729-905-15	TRANSISTOR DTC144WU	
Q351	8-729-905-15	TRANSISTOR DTC144WU	
Q352	8-729-117-54	TRANSISTOR 2SA1175	
Q353	8-729-905-15	TRANSISTOR DTC144WU	
Q354	8-729-602-21	TRANSISTOR 2SC4154	
Q356	8-729-100-76	TRANSISTOR 2SA812	
Q357	8-729-100-66	TRANSISTOR 2SC1623	
Q358	8-729-905-15	TRANSISTOR DTC144WU	
Q359	8-729-602-21	TRANSISTOR 2SC4154	
Q361	8-729-602-36	TRANSISTOR 2SA1602	
Q362	8-729-602-21	TRANSISTOR 2SC4154	
Q363	8-729-905-15	TRANSISTOR DTC144WU	
Q364	8-729-905-15	TRANSISTOR DTC144WU	
Q366	8-729-602-21	TRANSISTOR 2SC4154	
Q367	8-729-905-15	TRANSISTOR DTC144WU	
Q368	8-729-602-21	TRANSISTOR 2SC4154	
Q369	8-729-101-07	TRANSISTOR 2SB798	
Q370	8-729-602-36	TRANSISTOR 2SA1602	
Q371	8-729-602-36	TRANSISTOR 2SA1602	
Q373	8-729-602-36	TRANSISTOR 2SA1602	
Q375	8-729-903-10	TRANSISTOR FMW1	
Q376	8-729-905-09	TRANSISTOR DTA144WU	
Q377	8-729-602-21	TRANSISTOR 2SC4154	
Q378	8-729-602-21	TRANSISTOR 2SC4154	
Q379	8-729-602-36	TRANSISTOR 2SA1602	

RESISTOR

Ref.No	Part No.	Description	Remark
R251	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R252	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R253	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R254	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R255	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R331	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	

Ref.No	Part No.	Description			Remark
R332	1-216-295-00	METAL GLAZE	0	5%	1/10W
R334	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R335	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R340	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R341	1-216-295-00	METAL GLAZE	0	5%	1/10W
R342	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R343	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R344	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R345	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R346	1-216-045-00	METAL GLAZE	680	5%	1/10W
R347	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R348	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R350	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R351	1-216-047-00	METAL GLAZE	820	5%	1/10W
R352	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R353	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R354	1-216-041-00	METAL GLAZE	470	5%	1/10W
R355	1-216-023-00	METAL GLAZE	82	5%	1/10W
R356	1-216-015-00	METAL GLAZE	39	5%	1/10W
R357	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R358	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R360	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R361	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R362	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R363	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R364	1-216-039-00	METAL GLAZE	390	5%	1/10W
R365	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R366	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R367	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R368	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R369	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R370	1-216-041-00	METAL GLAZE	470	5%	1/10W
R371	1-216-041-00	METAL GLAZE	470	5%	1/10W
R372	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R373	1-216-041-00	METAL GLAZE	470	5%	1/10W
R375	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R376	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R378	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R379	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R380	1-216-045-00	METAL GLAZE	680	5%	1/10W
R381	1-216-047-00	METAL GLAZE	820	5%	1/10W
R382	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R383	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R384	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R385	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R386	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R387	1-216-045-00	METAL GLAZE	680	5%	1/10W
R388	1-216-043-00	METAL GLAZE	560	5%	1/10W
R389	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R390	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R391	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R392	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R393	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R394	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R395	1-216-039-00	METAL GLAZE	390	5%	1/10W
R396	1-216-027-00	METAL GLAZE	120	5%	1/10W
R397	1-216-035-00	METAL GLAZE	270	5%	1/10W
R398	1-216-027-00	METAL GLAZE	120	5%	1/10W
R399	1-216-009-00	METAL GLAZE	22	5%	1/10W
R400	1-216-025-00	METAL GLAZE	100	5%	1/10W
R401	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R402	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R403	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R404	1-216-295-00	METAL GLAZE	0	5%	1/10W
R405	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R406	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R407	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R409	1-216-117-00	METAL GLAZE	680K	5%	1/10W
R410	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R411	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R412	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R413	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R414	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R415	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R416	1-216-045-00	METAL GLAZE	680	5%	1/10W
R417	1-216-045-00	METAL GLAZE	680	5%	1/10W
R418	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R422	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R424	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R425	1-216-045-00	METAL GLAZE	680	5%	1/10W
R426	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R428	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R429	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R442	1-249-417-11	CARBON	1K	5%	1/4W
R443	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R444	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R445	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R446	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R447	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R448	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R449	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R450	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R451	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R452	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R453	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R454	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R455	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R456	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R457	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R458	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R459	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R460	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R461	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R462	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R463	1-216-138-00	METAL GLAZE	3.3	5%	1/8W
R465	1-216-037-00	METAL GLAZE	330	5%	1/10W
R466	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R467	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R468	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R469	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R470	1-216-041-00	METAL GLAZE	470	5%	1/10W
R471	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R472	1-216-041-00	METAL GLAZE	470	5%	1/10W
R475	1-216-033-00	METAL GLAZE	220	5%	1/10W
R476	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R477	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R478	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R479	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R480	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R481	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R482	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R483	1-216-043-00	METAL GLAZE	560	5%	1/10W
R484	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R485	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R487	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R488	1-216-021-00	METAL GLAZE	68	5%	1/10W
R489	1-216-047-00	METAL GLAZE	820	5%	1/10W
R490	1-216-009-00	METAL GLAZE	22	5%	1/10W
R491	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R492	1-216-089-00	METAL GLAZE	47K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R493	1-216-033-00	METAL GLAZE	220	5%	1/10W
R494	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R507	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R514	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R516	1-216-003-11	METAL GLAZE	12	5%	1/10W
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W

VARIABLE RESISTOR

RV251	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV331	1-230-867-11	RES, ADJ, METAL GLAZE 1K
RV332	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV333	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV334	1-230-871-11	RES, ADJ, METAL GLAZE 22K

THERMISTOR

TH331	1-800-200-00	THERMISTOR

TESTPOINT

TP331	*1-535-622-11	PIN, TERMINAL
TP332	*1-535-622-11	PIN, TERMINAL

CRYSTAL

X331	1-567-347-11	OSCILLATOR, CERAMIC
X332	1-567-504-11	OSCILLATOR, CRYSTAL
X333	1-567-699-21	VIBRATOR, CRYSTAL

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A-7060-693-A FP-53 FLEXIBLE BOARD, COMPLETE

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3-713-904-01 HOLDER (2), LED

DIODE

D302	8-719-940-81	DIODE GL452S
D303	8-719-801-55	TLP907-O
D304	8-719-801-55	TLP907-O

SWITCH

S301	1-570-869-11	SWITCH, PUSH (2 KEY) TAPE SELECT/REC PROOF

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*A-7060-926-A VC-24P BOARD, COMPLETE

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A-7068-094-A CP-19P BOARD, COMPLETE(HIC)

*3-718-261-01 HOLDER, WB SENSOR

CAPACITOR

Ref.No	Part No.	Description			Remark
C701	1-162-637-11	CERAMIC CHIP	0.47MF		16V
C702	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C703	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C704	1-135-083-00	TANTAL CHIP	0.47MF	20%	25V
C705	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V
C706	1-126-204-11	ELECT	47MF	20%	16V
C707	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C708	1-126-204-11	ELECT	47MF	20%	16V
C709	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V
C710	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V
C711	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C712	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C713	1-126-206-11	ELECT	100MF	20%	6.3V
C714	1-126-206-11	ELECT	100MF	20%	6.3V
C715	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C716	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C717	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C718	1-135-096-21	TANTAL CHIP	4.7MF	20%	10V
C719	1-162-638-11	CERAMIC CHIP	1MF		16V
C721	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C723	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C724	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C725	1-135-155-21	TANTAL CHIP	4.7MF	20%	10V
C726	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C727	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C728	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C729	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V
C730	1-163-081-00	CERAMIC CHIP	0.22MF		25V
C732	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C733	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C734	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C735	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C736	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C737	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C738	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C739	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C741	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C742	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C743	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C744	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C745	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C746	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C747	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C749	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C751	1-135-101-21	TANTAL CHIP	22MF	20%	6.3V
C754	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C755	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C808	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C809	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C810	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C811	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C812	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C813	1-135-096-21	TANTAL CHIP	4.7MF	20%	10V
C814	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C815	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C817	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C818	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C819	1-135-091-00	TANTAL CHIP	1MF	20%	16V
C820	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C821	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C822	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C823	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C824	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C825	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C828	1-124-566-11	ELECT	120MF	20%	6.3V
C829	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C851	1-130-467-00	MYLAR	470PF	5%	50V
C852	1-130-481-00	MYLAR	0.0068MF	5%	50V
C853	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C854	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C855	1-135-100-21	TANTAL CHIP	6.8MF	20%	6.3V
C856	1-162-638-11	CERAMIC CHIP	1MF		16V
C857	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C858	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C859	1-126-208-11	ELECT	47MF	20%	4V
C860	1-126-208-11	ELECT	47MF	20%	4V

CONNECTOR

CN701	*1-564-014-00	PIN, CONNECTOR 4P

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
CN702	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN703	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN801	*1-564-012-00	PIN, CONNECTOR 2P	

DIODE

Ref.No	Part No.	Description	Remark
D701	8-719-100-05	DIODE 1S2837	
D801	8-719-100-03	DIODE 1S2835	
D851	8-719-100-05	DIODE IS2837	

DELAY LINE

Ref.No	Part No.	Description	Remark
DL801	1-415-448-21	DELAY LINE	

IC

Ref.No	Part No.	Description	Remark
IC701	8-759-100-94	IC UPC358G2	
IC702	8-752-034-68	IC CXA1337Q	
IC703	8-759-106-47	IC UPD4538BG	
IC704	8-759-106-47	IC UPD4538BG	
IC801	8-752-032-92	IC CXA1072Q	
IC851	8-759-939-68	IC TL062ACPS	
IC852	8-759-100-93	IC UPC393G2	
IC853	8-759-106-23	IC UPD4066BG	
IC854	8-759-012-75	IC MC146805F2FPSC82533F	

COIL

Ref.No	Part No.	Description	Remark
L701	1-421-904-21	COIL, CHOKE 47UH	
L702	1-410-371-21	INDUCTOR CHIP 1.5UH	
L704	1-410-371-21	INDUCTOR CHIP 1.5UH	
L801	1-410-393-11	INDUCTOR CHIP 100UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q701	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q702	8-729-100-75	TRANSISTOR 2SA812-M5	
Q703	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q704	8-729-100-76	TRANSISTOR 2SA812	
Q705	8-729-100-76	TRANSISTOR 2SA812	
Q706	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q707	8-729-100-76	TRANSISTOR 2SA812	
Q708	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q709	8-729-100-76	TRANSISTOR 2SA812	
Q712	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q713	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q714	8-729-100-76	TRANSISTOR 2SA812	
Q715	8-729-100-76	TRANSISTOR 2SA812	
Q716	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q781	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q801	8-729-100-76	TRANSISTOR 2SA812	
Q802	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q851	8-729-903-30	TRANSISTOR DTC144TK	
Q852	8-729-903-30	TRANSISTOR DTC144TK	
Q853	8-729-904-20	TRANSISTOR FMA2	
Q854	8-729-904-20	TRANSISTOR FMA2	
Q857	8-729-901-06	TRANSISTOR DTA144EK	
Q858	8-729-904-07	TRANSISTOR FMG2	
Q859	8-729-904-07	TRANSISTOR FMG2	
Q862	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description			Remark
R701	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R702	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R703	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R704	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R705	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R706	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R707	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R708	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R709	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R710	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R711	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R712	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R713	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R714	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R715	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R716	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R717	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R718	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R719	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R720	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R721	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R722	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R723	1-216-045-00	METAL GLAZE	680	5%	1/10W
R724	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R725	1-216-045-00	METAL GLAZE	680	5%	1/10W
R726	1-216-295-00	METAL GLAZE	0	5%	1/10W
R727	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R728	1-216-047-00	METAL GLAZE	820	5%	1/10W
R729	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R731	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R732	1-216-689-11	METAL CHIP	39K	0.50%	1/10W
R733	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R734	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R735	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R736	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R738	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R739	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R741	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R742	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R743	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R744	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R745	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R746	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R748	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R749	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R750	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R751	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R754	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R755	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R756	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R757	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R758	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R759	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R760	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R761	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R762	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R763	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R764	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R767	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R768	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R769	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R770	1-216-115-00	METAL GLAZE	560K	5%	1/10W
R771	1-216-119-00	METAL GLAZE	820K	5%	1/10W
R772	1-216-695-00	METAL CHIP	68K	0.5%	1/10W
R773	1-216-697-00	METAL CHIP	82K	0.5%	1/10W
R774	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R775	1-216-037-00	METAL GLAZE	330	5%	1/10W
R776	1-216-295-00	METAL GLAZE	0	5%	1/10W
R778	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R779	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R781	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R801	1-216-134-00	METAL GLAZE	2.2	5%	1/8W
R806	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R807	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R808	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R809	1-216-083-00	METAL GLAZE	27K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
R810	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R811	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R812	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R813	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R816	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R817	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R818	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R819	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R820	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R821	1-216-099-00	METAL GLAZE	120K	5%	1/10W
R823	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R825	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R826	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R827	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R828	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R830	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R851	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R852	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R853	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R854	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R855	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R856	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R857	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R858	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R859	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R860	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R861	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R862	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R863	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R864	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R865	1-216-115-00	METAL GLAZE	560K	5%	1/10W
R866	1-216-107-00	METAL GLAZE	270K	5%	1/10W
R867	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R868	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R869	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R870	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R871	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R872	1-216-107-00	METAL GLAZE	270K	5%	1/10W
R873	1-216-099-00	METAL GLAZE	120K	5%	1/10W
R874	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R875	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R876	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R877	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R878	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R879	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R880	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R881	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R882	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R883	1-249-425-11	CARBON	4.7K	5%	1/4W
R885	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R886	1-216-073-00	METAL GLAZE	10K	5%	1/10W

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV701	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV702	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV704	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV801	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV802	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV803	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV804	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV805	1-230-871-11	RES, ADJ, METAL GLAZE 22K
RV806	1-230-871-11	RES, ADJ, METAL GLAZE 22K
RV807	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV851	1-230-871-11	RES, ADJ, METAL GLAZE 22K

When indicating parts by reference number, please include the board name.

SENSOR

Ref.No	Part No.	Description	Remark
SB851	1-807-684-11	SENSOR, WHITE BALANCE	

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Ref.No	Part No.	Description
	*A-7060-925-A	VC-23P BOARD, COMPLETE

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A-7068-082-A DT-62P BOARD, COMPLETE (HIC)

Ref.No	Part No.	Description
	1-622-942-11	PC BOARD, FP-54 FLEXIBLE
	3-718-224-01	HOLDER (A), C PC BOARD
	3-718-256-01	HOLDER (B), C PC BOARD
	*3-719-692-01	PLATE (R), SHIELD, VC-23

CAPACITOR

Ref.No	Part No.	Description			Remark
C602	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C603	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C604	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C605	1-124-258-00	ELECT	3.3MF	20%	50V
C606	1-163-013-00	CERAMIC CHIP	0.0022MF	10%	50V
C607	1-124-478-11	ELECT	100MF	20%	25V
C609	1-124-257-00	ELECT	2.2MF	20%	50V
C611	1-162-638-11	CERAMIC CHIP	1MF		16V
C612	1-124-224-00	ELECT	47MF	20%	6.3V
C618	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C619	1-124-584-00	ELECT	100MF	20%	10V
C620	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C621	1-124-242-00	ELECT	33MF	20%	25V
C622	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C623	1-124-247-00	ELECT	10MF	20%	25V
C624	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C625	1-124-584-00	ELECT	100MF	20%	10V
C626	1-124-225-00	ELECT	100MF	20%	6.3V
C627	1-124-225-00	ELECT	100MF	20%	6.3V
C628	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C629	1-124-258-00	ELECT	3.3MF	20%	50V
C630	1-124-247-00	ELECT	10MF	20%	35V
C631	1-124-247-00	ELECT	10MF	20%	35V
C632	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C634	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C635	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C636	1-124-258-00	ELECT	3.3MF	20%	35V
C652	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C654	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C655	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C656	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C658	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C659	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C660	1-162-638-11	CERAMIC CHIP	1MF		16V
C661	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C662	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C663	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C664	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C665	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C666	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C667	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C668	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C669	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C670	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C671	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V

CONNECTOR

Ref.No	Part No.	Description
CN601	*1-506-743-11	PIN, CONNECTOR 5P

Ref.No	Part No.	Description	Remark
		TRIMMER	
CT651	1-141-347-11	CAP, VAR, TRIMMER (CHIP) 10P	
CT652	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P	
		DIODE	
D602	8-719-100-05	DIODE 1S2837	
D603	8-719-100-03	DIODE 1S2835	
D604	8-719-100-03	DIODE 1S2835	
D605	8-719-100-03	DIODE 1S2835	
D651	8-713-220-00	DIODE 1T32-2	
		IC	
IC601	8-750-011-32	IC IU024AK-12A	
IC602	8-752-324-14	IC CXD1141M	
IC651	8-752-321-16	IC CXD1030M	
		COIL	
L601	1-421-904-21	COIL, CHOKE 47UH	
L608	1-421-904-21	COIL, CHOKE 47UH	
L609	1-410-393-11	INDUCTOR CHIP 100UH	
L651	1-410-389-11	INDUCTOR CHIP 47UH	
		TRANSISTOR	
Q601	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q602	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q603	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q604	8-729-105-53	TRANSISTOR 2SK300	
Q605	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q606	8-729-100-76	TRANSISTOR 2SA812	
Q607	8-729-101-07	TRANSISTOR 2SB798	
Q608	8-729-103-72	TRANSISTOR 2SD1005	
Q651	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q652	8-729-175-73	TRANSISTOR 2SC2757	
Q653	8-729-175-72	TRANSISTOR 2SC2757-T33	
		RESISTOR	
R601	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R602	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R603	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
R604	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R605	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R606	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R607	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R608	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R609	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R610	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R611	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R612	1-216-308-00	METAL GLAZE 4.7 5% 1/10W	
R613	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R614	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R615	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R616	1-216-154-00	METAL GLAZE 15 5% 1/8W	
R617	1-216-154-00	METAL GLAZE 15 5% 1/8W	
R618	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R620	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R651	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R652	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R654	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R655	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R656	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R657	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R658	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R660	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R661	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R662	1-216-093-00	METAL GLAZE 68K 5% 1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R663	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R664	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R665	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R667	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R668	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R669	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R670	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R671	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R672	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R673	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R674	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R675	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R677	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
		VARIABLE RESISTOR	
RV601	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
		CRYSTAL	
X651	1-567-733-11	VIBRATOR, CRYSTAL 17.7MHz	
X652	1-567-732-12	VIBRATOR, CRYSTAL 28.3750MHz	

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*A-7085-010-A VF-9P BOARD, COMPLETE
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(Include LD-8P BOARD)

Ref.No	Part No.	Description	Remark
	1-526-978-11	SOCKET, ASSY CRT	
		CAPACITOR	
C901	1-162-638-11	CERAMIC CHIP 1MF 16V	
C902	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C903	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C904	1-124-444-00	ELECT 220MF 20% 6.3V	
C905	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C906	1-163-081-00	CERAMIC CHIP 0.22MF 25V	
C907	⚠1-130-481-11	MYLAR 0.0068MF 5% 50V	
C908	⚠1-163-019-91	CERAMIC CHIP 0.0068MF 10% 50V	
C909	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C910	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C911	1-124-255-00	ELECT 1MF 20% 50V	
C912	1-163-137-00	CERAMIC CHIP 680PF 5% 50V	
C913	1-163-033-00	CERAMIC CHIP 0.022MF 50V	
C915	1-136-175-00	FILM 0.68MF 5% 50V	
C916	1-124-224-00	ELECT 47MF 20% 6.3V	
C917	1-163-209-00	CERAMIC CHIP 0.0015MF 5% 50V	
C918	1-124-462-00	ELECT 10MF 20% 16V	
C919	1-163-033-00	CERAMIC CHIP 0.022MF 10% 25V	
C920	1-124-444-00	ELECT 220MF 20% 6.3V	
C921	1-124-638-11	ELECT 22MF 20% 6.3V	
C922	1-162-993-11	CERAMIC CHIP 0.22MF 10% 16V	
C923	1-131-388-00	TANTALUM 68MF 10% 3.15V	
		CONNECTOR	
CN901	*1-564-001-11	PIN, CONNECTOR 2P	
CN902	*1-564-001-11	PIN, CONNECTOR 2P	
		COMBINATION PARTS	
CP901	1-237-730-11	RES, ADJ 470/2.2K/2.2K/1M	
		DIODE	
D901	8-719-101-23	DIODE 1SS123	
D902	8-719-801-26	DIODE TLR223	
D903	8-719-100-03	DIODE 1S2835	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark
		IC	
IC901	8-759-403-49	IC AN2510S	
		COIL	
L901	⚠1-408-980-41	MICRO INDUCTOR 68UH	
L902	1-408-775-21	INDUCTOR CHIP 6.8UH	
L903	⚠1-459-747-21	COIL, FERRITE (HLC)	
		IC LINK	
PS901	⚠1-532-933-11	LINK, IC 0.25A	
		TRANSISTOR	
Q901	⚠8-729-900-99	TRANSISTOR DTA144WK	
Q902	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q903	8-729-106-64	TRANSISTOR 2SD1615	
Q904	8-729-216-32	TRANSISTOR 2SA1163G	
		RESISTOR	
R901	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R903	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R904	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R905	⚠1-216-073-91	METAL GLAZE 10K 5% 1/10W	
R906	⚠1-216-051-91	METAL GLAZE 1.2K 5% 1/10W	
R907	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R908	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R909	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R910	1-216-125-00	METAL GLAZE 1.5M 5% 1/10W	
R911	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R912	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R913	1-216-128-11	METAL GLAZE 2M 5% 1/10W	
R914	1-216-019-00	METAL GLAZE 56 5% 1/10W	
R915	1-216-068-00	METAL GLAZE 6.2K 5% 1/10W	
R916	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R917	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R918	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R919	1-216-671-11	METAL CHIP 6.8K 0.50% 1/10W	
R920	1-216-306-11	METAL GLAZE 3.9 5% 1/10W	
R921	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R922	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R923	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R924	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R928	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R929	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R930	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R931	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R932	1-216-025-00	METAL GLAZE 100 5% 1/10W	
		VARIABLE RESISTOR	
RV901	1-230-203-00	RES, ADJ, METAL GLAZE 2.2M	
		TRANSFORMER	
T901	⚠1-439-414-11	TRANSFORMER ASSY, FLYBACK	
		THERMISTOR	
TH901	1-807-938-11	THERMISTOR (500)	

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Ref.No	Part No.	Description	Remark
	*1-622-923-22	LD-8P BOARD ********	
		DIODE	
D904	8-719-404-19	DIODE LN1251C	

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Ref.No	Part No.	Description	Remark
	*A-7061-491-A	FD-4P BOARD, COMPLETE ***************	
		CAPACITOR	
C151	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C152	1-162-638-11	CERAMIC CHIP 1MF 16V	
C153	1-162-638-11	CERAMIC CHIP 1MF 16V	
C154	1-163-033-00	CERAMIC CHIP 0.022MF 10% 25V	
C155	1-163-101-00	CERAMIC CHIP 22PF 5% 50V	
C156	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C157	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C158	1-162-638-11	CERAMIC CHIP 1MF 16V	
C160	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C161	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C165	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C166	1-135-100-21	TANTAL. CHIP 6.8MF 20% 6.3V	
C167	1-135-100-21	TANTAL. CHIP 6.8MF 20% 6.3V	
		CONNECTOR	
CN151	*1-566-533-11	CONNECTOR, FPC (ZIF) 17P	
CN152	*1-506-467-11	PIN, CONNECTOR 2P	
		TRIMMER	
CT151	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30P	
		DIODE	
D151	8-719-404-12	DIODE MA159	
D152	8-719-404-12	DIODE MA159	
D153	⚠8-719-105-73	DIODE RD4.7M-B2	
D154	8-719-105-99	DIODE RD6.2M-B1	
		IC	
IC151	8-759-144-22	IC UPD7503G-B42-12	
IC152	8-759-937-56	IC S-8054ALB-LM	
		INDICATOR TUBE	
ND151	1-808-002-21	DISPLAY PANEL, LIQUID CRYSTAL	
		TRANSISTOR	
Q151	8-729-602-21	TRANSISTOR 2SC4154	
Q152	⚠8-729-602-36	TRANSISTOR 2SA1602	
Q153	8-729-109-43	TRANSISTOR 2SK94-X3	
Q154	8-729-903-97	TRANSISTOR FMS1FE	
Q155	8-729-602-21	TRANSISTOR 2SC4154	
Q156	8-729-602-36	TRANSISTOR 2SA1602	
Q157	8-729-602-36	TRANSISTOR 2SA1602	
Q158	8-729-602-36	TRANSISTOR 2SA1602	
Q159	8-729-602-36	TRANSISTOR 2SA1602	
Q160	8-729-602-36	TRANSISTOR 2SA1602	
Q162	8-729-905-12	TRANSISTOR DTA144EU	
Q163	8-729-901-03	TRANSISTOR DTC144WK	

When indicating parts by reference number, please include the board name.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

RESISTOR

Ref.No	Part No.	Description	Remark
R148	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R149	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R150	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R151	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R152	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R153	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R155	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R156	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R157	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R158	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R159	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R160	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R161	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R162	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R163	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R164	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R165	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R166	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R167	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R168	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R169	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R170	⚠1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R171	⚠1-216-093-91	METAL GLAZE 68K 5% 1/10W	
R172	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R173	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W	
R174	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R175	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R176	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R177	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R178	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R179	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R180	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R181	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R182	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R183	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R184	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R185	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R186	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R187	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R188	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R189	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R190	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R191	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R192	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R193	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R194	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R195	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R196	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R197	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R198	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R199	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV151	1-237-776-11	RES, VAR, CARBON 10K	

SWITCH

Ref.No	Part No.	Description	Remark
S151	1-570-870-11	SWITCH, SLIDE	AUTO LOCK
S152	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)SHUTTER	
S153	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)ZERO MEM	
S154	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)FADER	
S155	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)EDIT SERCH-	
S156	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S157	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)RESET	
S158	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)WHITE BAL	
S159	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)EDIT SERCH+	
S160	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)DATA SET	
S161	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)SELECT	
S162	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)FOCUS	

When indicating parts by reference number, please include the board name.

TESTPOINT

Ref.No	Part No.	Description	Remark
TP151	*1-535-622-11	PIN, TERMINAL	
TP152	*1-535-622-11	PIN, TERMINAL	
TP155	*1-535-622-11	PIN, TERMINAL	
TP156	*1-535-622-11	PIN, TERMINAL	

CRYSTAL

Ref.No	Part No.	Description	Remark
X151	1-527-997-21	VIBRATOR, CRYSTAL 32.768KHz	

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*1-622-927-21 FK-4P BOARD

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CONNECTOR

Ref.No	Part No.	Description	Remark
CN153	*1-563-586-11	CONNECTOR, FLEXIBLE 9P	

SWITCH

Ref.No	Part No.	Description	Remark
S163	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) ▮▶	
S164	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) ▮▮	
S165	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) ▷	
S166	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) FF ▶▶	
S167	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) ■	
S168	1-571-102-11	SWITCH, SLIDE REC ●	
S169	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) REW ◀◀	
S170	1-571-102-11	SWITCH, SLIDE EJECT	
S171	1-571-101-11	SWITCH, SLIDE CAM, OFF, VTR	

TESTPOINT

Ref.No	Part No.	Description	Remark
TP157	*1-535-622-11	PIN, TERMINAL	

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*A-7060-937-A SW-40P BOARD, COMPLETE

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CAPACITOR

Ref.No	Part No.	Description	Remark
C951	1-123-321-00	ELECT 220MF 20% 16V	
C952	1-135-104-00	TANTAL CHIP 10MF 20% 4V	
C953	1-163-141-00	CERAMIC CHIP 0.001MF 50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN951	*1-564-005-00	PIN, CONNECTOR 6P	
CN952	*1-564-002-00	PIN, CONNECTOR 3P	
CN953	*1-564-001-11	PIN, CONNECTOR 2P	
CN954	*1-564-001-11	PIN, CONNECTOR 2P	

COIL

Ref.No	Part No.	Description	Remark
L951	1-410-337-11	MICRO INDUCTOR 1UH	
L952	1-410-337-11	MICRO INDUCTOR 1UH	
L953	1-410-369-11	INDUCTOR CHIP 1UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q951	8-729-903-10	TRANSISTOR FMW1	
Q952	8-729-805-25	TRANSISTOR 2SB1121	
Q953	8-729-162-44	TRANSISTOR 2SB624	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

RESISTOR

Ref.No	Part No.	Description				Remark
R951	1-216-334-11	METAL GLAZE	22K	1%	1/10W	
R952	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R953	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R954	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R955	1-216-334-11	METAL GLAZE	22K	1%	1/10W	
R956	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R957	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R958	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R959	1-216-158-00	METAL GLAZE	22	5%	1/8W	

SWITCH

S951	1-570-689-11	SWITCH, KEY BOARD START/STOP
S952	1-553-977-00	SWITCH, SLIDE STANDBY–LOCK

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*A-7061-490-A MC-34 BOARD, COMPLETE
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CAPACITOR

C550	1-126-154-11	ELECT	47MF	20%	6.3V	A
C551	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	A
C552	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	A
C553	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	A
C554	1-163-020-00	CERAMIC CHIP	0.0082MF	10%	50V	A
C555	1-162-587-91	CERAMIC CHIP	0.039MF	10%	25V	A
C556	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	A
C557	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	A
C558	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	A
C559	1-164-006-11	CERAMIC CHIP	0.33MF	10%	16V	A
C560	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	A
C561	1-163-077-00	CERAMIC CHIP	0.1MF		50V	A
C562	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	A

CONNECTOR

CN550	*1-566-198-11	PIN, CONNECTOR (PC BOARD) 5P	A

I C

IC550	8-759-111-56	IC UPC4572G2	C

JACK

J550	1-507-921-00	JACK (MIC)	A
J551	1-563-454-11	JACK, MINIATURE (DC OUT)	B
J552	1-507-921-00	JACK (EARPHONE)	A

COIL

L550	1-410-369-11	INDUCTOR CHIP 1UH	A
L551	1-410-369-11	INDUCTOR CHIP 1UH	A
L552	1-410-369-11	INDUCTOR CHIP 1UH	A
L553	1-410-192-51	INDUCTOR CHIP 1UH	B
L554	1-410-192-51	INDUCTOR CHIP 1UH	B
L555	1-410-192-51	INDUCTOR CHIP 1UH	B

TRANSISTOR

Q550	8-729-905-23	TRANSISTOR 2SA1576R	A
Q551	8-729-109-43	TRANSISTOR 2SK94-X3	B

RESISTOR

R550	1-216-025-00	METAL GLAZE	100	5%	1/10W	A
R551	1-216-111-00	METAL GLAZE	390K	5%	1/10W	A
R552	1-216-097-00	METAL GLAZE	100K	5%	1/10W	A
R553	1-216-077-00	METAL GLAZE	15K	5%	1/10W	A
R554	1-216-073-00	METAL GLAZE	10K	5%	1/10W	A
R556	1-216-093-00	METAL GLAZE	68K	5%	1/10W	A
R557	1-216-093-00	METAL GLAZE	68K	5%	1/10W	A
R558	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	A
R559	1-216-103-00	METAL GLAZE	180K	5%	1/10W	A
R560	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	A
R561	1-216-089-00	METAL GLAZE	47K	5%	1/10W	A
R562	1-216-093-00	METAL GLAZE	68K	5%	1/10W	A
R563	1-216-121-00	METAL GLAZE	1M	5%	1/10W	A

When indicating parts by reference number, please include the board name.

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*A-7060-961-A AF-32 BOARD, COMPLETE
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CAPACITOR

C001	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C002	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C003	1-124-464-11	ELECT	0.22MF	20%	50V
C004	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C005	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C006	1-124-234-00	ELECT	22MF	20%	16V
C007	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C008	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C009	1-124-026-00	ELECT(BLOCK)	3300MF		35V
C010	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V

CONNECTOR

CN001	1-563-587-11	CONNECTOR, FLEXIBLE 10P
CN002	1-563-608-11	CONNECTOR, FLEXIBLE 5P
CN003	1-563-936-11	PIN, CONNECTOR 2P
CN004	1-563-937-11	PIN, CONNECTOR 3P

IC

IC001	9-909-857-01	IC HIM21
IC002	9-992-551-01	IC 8DC49AV-6691
IC003	9-909-855-01	IC LAG648

TRANSISTOR

Q001	8-729-103-16	TRANSISTOR 2SC1622A-D17
Q002	8-729-104-26	TRANSISTOR 2SB804-AW

RESISTOR

R001	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R002	1-216-295-00	METAL GLAZE	0	5%	1/10W
R003	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R004	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R005	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R006	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R007	1-216-046-00	METAL GLAZE	750	5%	1/10W
R008	1-216-046-00	METAL GLAZE	750	5%	1/10W
R009	1-216-080-00	METAL GLAZE	20K	5%	1/10W
R010	1-216-041-00	METAL GLAZE	470	5%	1/10W
R011	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R012	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R013	1-216-304-11	METAL GLAZE	3.3	5%	1/10W
R014	1-216-046-00	METAL GLAZE	750	5%	1/10W
R015	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R016	1-216-045-00	METAL GLAZE	680	5%	1/10W
R017	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W

VARIABLE RESISTOR

VR001	1-230-287-00	RES, ADJ, METAL GLAZE 10K
VR002	1-237-485-11	RES, ADJ, METAL FILM 220K
VR003	1-237-529-11	RES, ADJ, METAL FILM 1K

CRYSTAL

X001	1-567-470-11	VIBRATOR, CERAMIC

* *

Ref.No	Part No.	Description	Remark
	1-622-938-23	FP-70P FLEXIBLE BOARD	
	1-535-658-21	TERMINAL BOARD	

IC LINK

Ref.No	Part No.	Description	Remark
PS951	⚠1-532-841-21	LINK, IC PRF1600 1.6A	
PS952	⚠1-532-841-21	LINK, IC PRF1600 1.6A	

MISCELLANEOUS

Ref.No	Part No.	Description	Remark
	⚠1-464-815-11	CONVERTER UNIT, DC-DC	
	1-535-574-11	TERMINAL, SHAFT GROUND	
	1-542-122-11	MICROPHONE, ELECTRET,CONDENSER	
	1-547-242-21	LENS, ZOOM (VCL-1206YH)	
	1-807-238-11	SENSOR, DEW CONDENSATION	
C901	1-161-051-00	CAP, CERAMIC 0.01MF X	
L901	⚠1-451-310-11	DEFLECTION YOKE (B/W)	
M902	A-7040-135-A	MOTOR BLOCK ASSY(2), CAPSTAN	
M903	1-541-508-11	MOTOR, DC (LOADING)	
S901	1-571-100-11	SWTCH,,PUSH (ZOOM)	
S902	1-553-226-00	SWITCH, LEAF (CC DOWN)	
V901	⚠1-546-065-21	CATHODE-RAY TUBE,B/W	

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
*3-718-220-01	CUSHION (UPPER)	
*3-718-221-01	CUSHION (LOWER)	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION	
3-769-236-11	MANUAL, INSTRUCTION (ENGLISH)	
3-769-236-41	MANUAL,INSTRUCTION(FRENCH,GERMANY,DUTCH) AEP,MODEL	
3-769-236-51	MANUAL,INSTRUCTION(SPANISH,SWEDISH,ITALIAN) AEP,E MODEL	
4-344-284-00	BAG, PROTECTION	

ACCESSORIES AND PACKING MATERIALS (KIT)

Part No.	Description	Remark
*A-6767-706-A	RFU ADAPTOR	
1-559-354-11	CORD, CONNECTION	
1-571-164-11	SWITCH ANTENNA CHANGE (CABLE)	
3-712-595-21	BELT, SHOWLDER	
3-712-673-01	SCREWDRIVER (AEP, E MODEL)	
*3-719-838-11	CARTON, ACC KIT	
*3-719-839-41	CARTON, OUTER	
*3-719-855-01	CUSHION (UPPER), ACC	
*3-719-856-01	CUSHION (LOWER), ACC	
3-786-154-11	MANUAL, INSTRUCTION (AC ADAPTOR)	
⚠.** A-6767-811-A	AC ADAPTOR	
***	BATTERY PACK	

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS A OPTIONAL ACCESSORIES.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 1
CAMERA SECTION ADJUSTMENT

See the adjusting part location diagram from on page 188 for the adjustments.

PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

1-1. LIST OF SERVICING JIGS

●Oscilloscope ●Stabilized power supply ●Adjusting screw driver ●L-shaped hexagonal wrench
●Stop watch ●Color monitor TV ●Vectorscope

Ref. No.	Name	Part No.	Use
J-1	Filter (C22)	J-6080-829-A	Automatic white balance operation check
J-2	ND filter 0.4	J-6080-860-A	IRIS setting adjustment, Max gain adjustment, chroma pedestal adjustment
	ND filter 0.1	J-6080-807-A	IRIS setting adjustment
	ND filter 0.9	J-6080-833-A	Max gain adjustment, LLA adjustment (Use 2pcs.)
J-3	Pattern box PTB-500 *¹	J-6029-140-A	
J-4	Color bar pattern chart	J-6020-250-A	
J-5	Extension cable K (4P, 2mm pitch)	J-6080-871-A	
J-6	Extension cable M (2P, 2mm pitch)	J-6080-873-A	
J-7	Extension cable V (5P, 1.25mm pitch)	J-6080-902-A	
J-8	Extension cable W (5P, 1mm pitch)	J-6080-903-A	
J-9	Extension cable X (17P, 1mm pitch)	J-6080-904-A	
J-10	Camera fixing jig	J-6080-894-A	
J-11	Siemens-star	J-6080-875-A	Flange back adjustment

*¹ PTB-100 (J-6020-490-A) is possible to use.

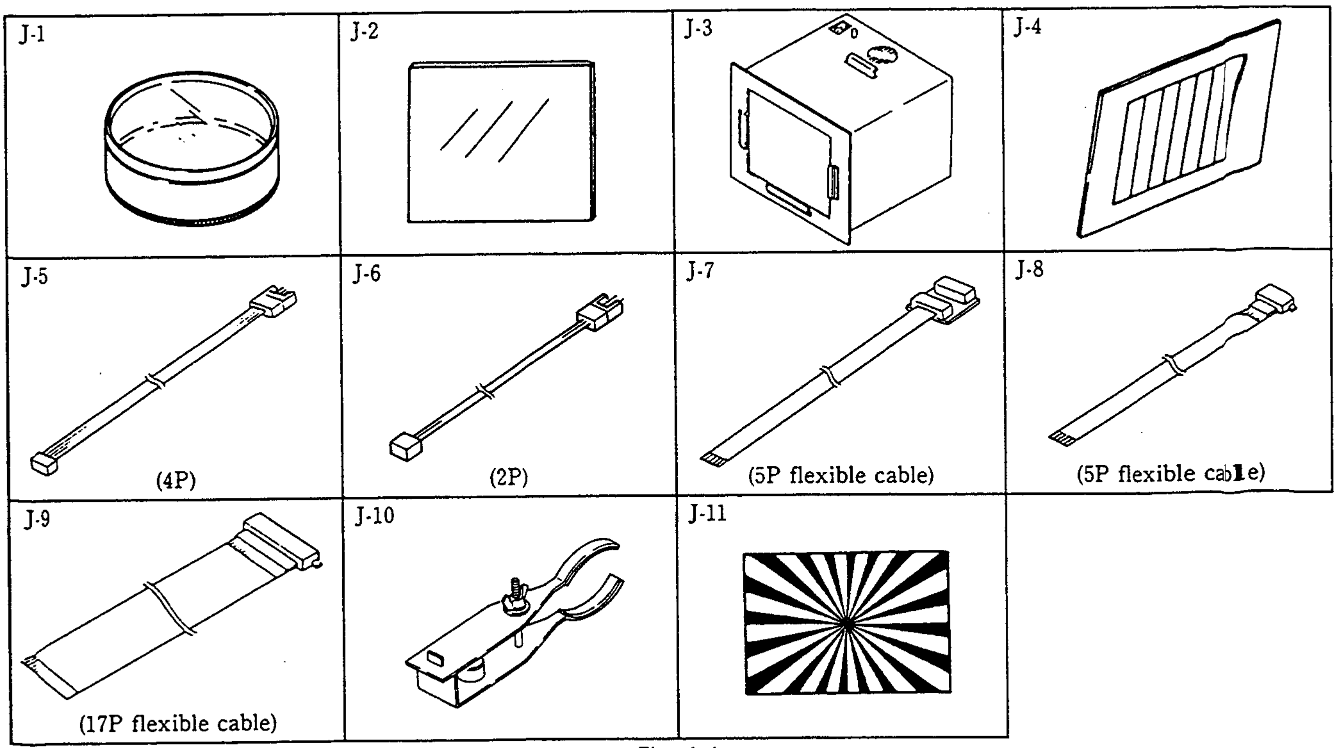


Fig. 1-1.

1-2. PREPARATIONS

Note:

Refer to SECTION 2. DISASSEMBLY of SERVICE MANUAL for details of the cabinet and individual boards removal procedure.

1) In order to be off the auto focusing, remove flexible board FP-59 from CN002 of AF-32 board. (Flexible board FP-59 should be connected for only adjustment of auto focus function.)
2) Connect extension cable as shown in Fig. 1-3.
3) EVF (Electrical View Finder) section (VF-9P board) is necessary for confirmation of shutter speed, white balance mode and etc.
   It can be removed by taking out CN333 of VA-36 board.
4) Mic board (MC-17P board) is not necessary. Remove it by taking out CN502 of VA-36 board.

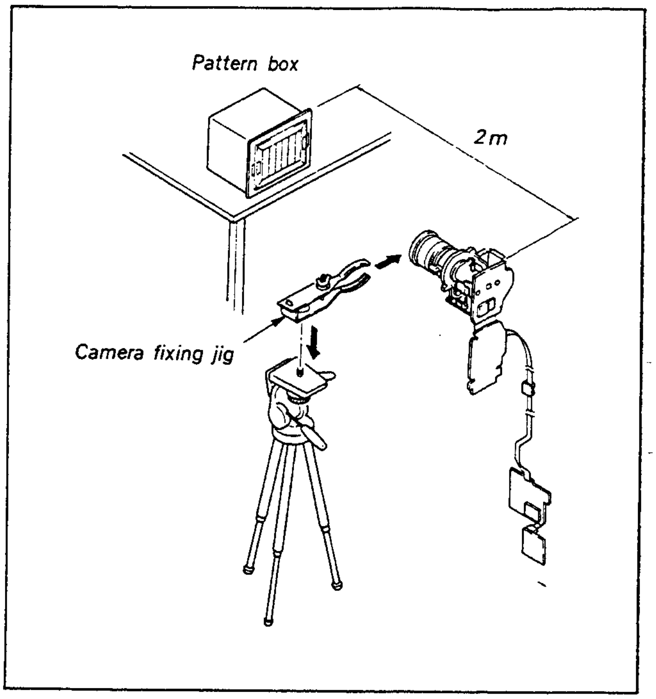

Pattern box
2m
Camera fixing jig

Fig. 1-2.

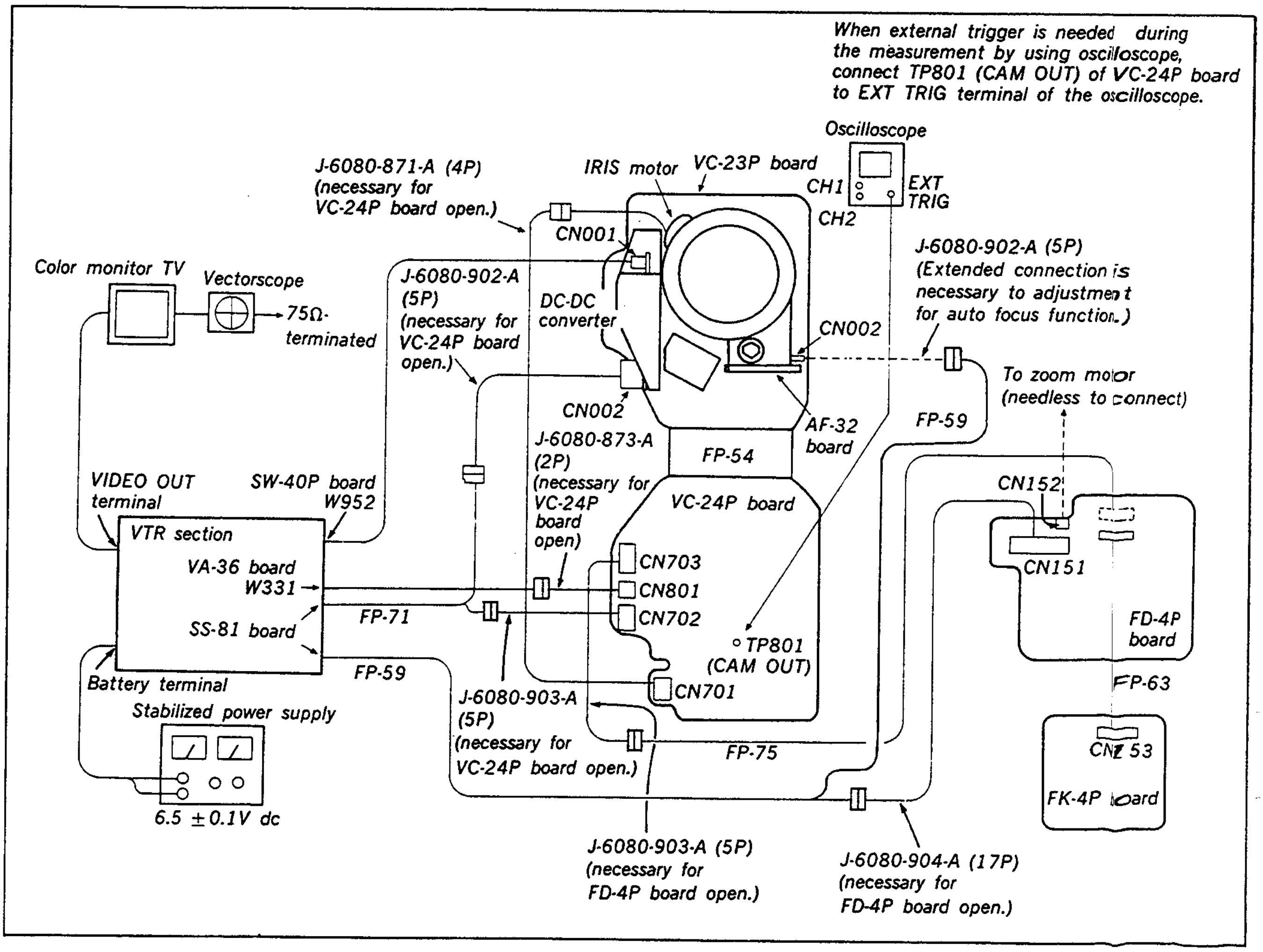

When external trigger is needed during the measurement by using oscilloscope, connect TP801 (CAM OUT) of VC-24P board to EXT TRIG terminal of the oscilloscope.
Oscilloscope
CH1
CH2
EXT TRIG
J-6080-871-A (4P) (necessary for VC-24P board open.)
IRIS motor
VC-23P board
CN001
Color monitor TV
Vectorscope
75Ω-terminated
J-6080-902-A (5P) (necessary for VC-24P board open.)
DC-DC converter
CN002
J-6080-902-A (5P) (Extended connection is necessary to adjustment for auto focus function.)
To zoom motor (needless to connect)
CN002
AF-32 board
FP-59
J-6080-873-A (2P) (necessary for VC-24P board open)
FP-54
VC-24P board
VIDEO OUT terminal
SW-40P board W952
VTR section
VA-36 board W331
SS-81 board
FP-71
CN703
CN801
CN702
TP801 (CAM OUT)
CN701
CN152
CN151
FD-4P board
FP-63
CN153
FK-4P board
FP-59
Battery terminal
Stabilized power supply
6.5 ±0.1V dc
J-6080-903-A (5P) (necessary for VC-24P board open.)
FP-75
J-6080-903-A (5P) (necessary for FD-4P board open.)
J-6080-904-A (17P) (necessary for FD-4P board open.)

Fig. 1-3.

1-3. CAUTION

1) Setting of switches

Employ the following switch and control settings in making adjustments, unless otherwise noted.

1. AUTO LOCK switch (S151 on FD-4P board)... Lock release position
2. IRIS control (RV151 on FD-4P board)... Center click position
3. FOCUS button (S162 on FD-4P board). . . Manual mode

Note:

This setting is unnecessary, when flexible board FP-59 is disconnected from CN002 of AF-32 board.

4. WHITE BALANCE button (S158 on FD-4P board)... INDOOR mode ("INDOOR" indication appears on EVF.)
5. SHUTTER SPEED button (S152 on FD-4P board)... Normal speed (No indication on EVF)

2) Adjusting order

As a rule, adjust in described order.

3) Objects

1. Color bar chart (Standard picture frame)

When making adjustments by the use of a color bar chart, first adjust picture frame as shown in Fig. 1-4. (Standard picture frame).

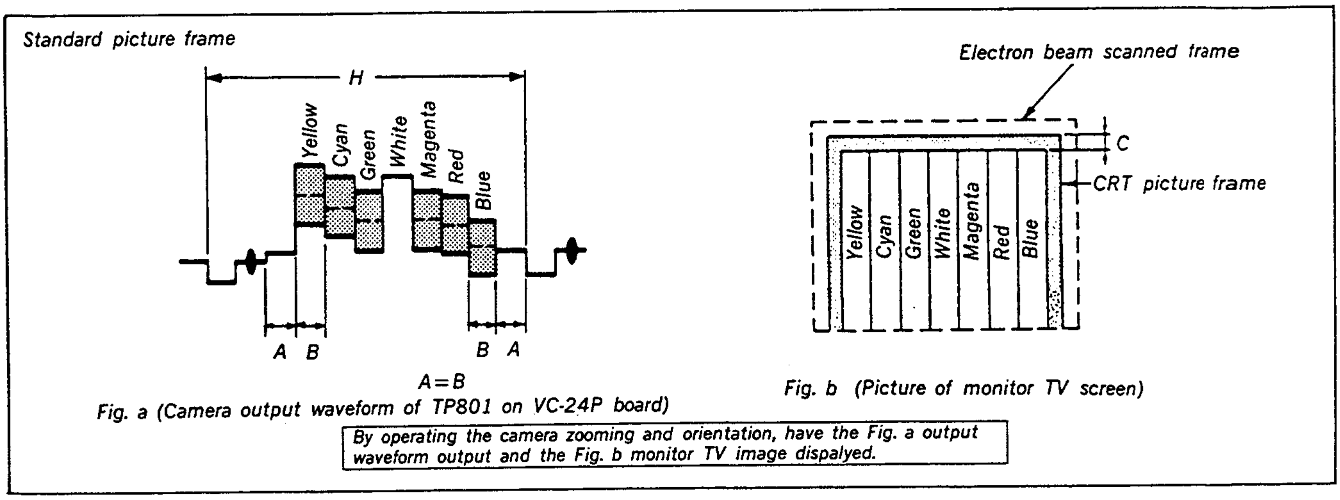

Standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
B A
A=B
Electron beam scanned frame
C
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Camera output waveform of TP801 on VC-24P board)

Fig. b (Picture of monitor TV screen)

By operating the camera zooming and orientation, have the Fig. a output waveform output and the Fig. b monitor TV image dispalyed.

Fig. 1-4.

2. Full white pattern

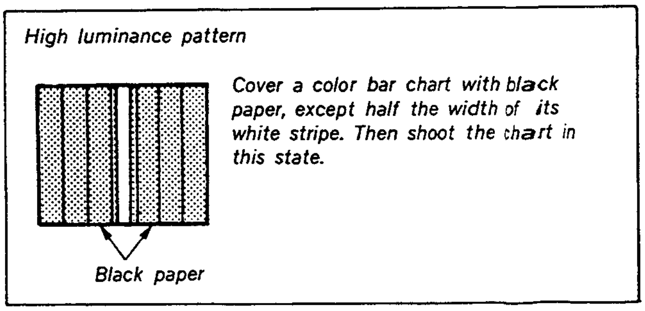
Remove color bar chart off pattern box, and set zoom lever to fully TELE side (72mm).

3. High luminance pattern

Prepare a high luminance pattern as shown in Fig. 1-5 and adjust picture frame as shown in Fig. 1-6.

4. Siemens star (J-6080-875-A)

Orient camera to have the pattern center coincide with the monitor screen center on a monitor TV screen.


High luminance pattern
Black paper

Cover a color bar chart with black paper, except half the width of its white stripe. Then shoot the chart in this state.

Fig. 1-5.

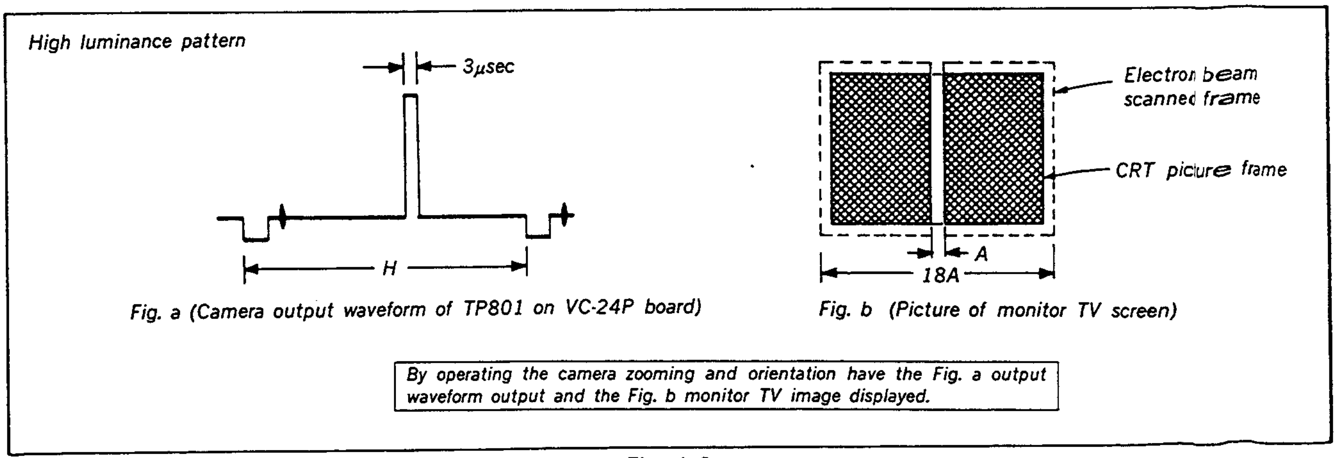

High luminance pattern
3μsec
H
Electron beam scanned frame
CRT picture frame
A
18A

Fig. a (Camera output waveform of TP801 on VC-24P board)

Fig. b (Picture of monitor TV screen)

By operating the camera zooming and orientation have the Fig. a output waveform output and the Fig. b monitor TV image displayed.

Fig. 1-6.

1-4. CAMERA SYSTEM ADJUSTMENT

1-4-1. Flange Back Adjustment

Subject	Siemens star (At approx. 2m distance in front of CCD surface (marked with "Φ"))
Measurement point	Check with a monitor TV
Measuring instrument	
Adjusting element	Flange back adjusting pin
Tools	L-shaped hexagonal wrench and screwdriver

[Adjustment procedure]

1) Set the FOCUS switch (S162 on FD-4P board) to its MANUAL position.
2) Position a Siemens star 2m directly in front of CCD surface (See Fig. 1-2.).
3) Orient camera block to have the center of the Siemens star on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of zoom lever to both its extreme WIDE position (12mm) and TELE position (72mm), and then set it at the extreme WIDE position. (In this process, also check the zooming operation on the monitor screen.)
5) Set IRIS control (RV151 on FD-4P board) at its OPEN position.
6) Set the lens focusing mark at the center of "2".

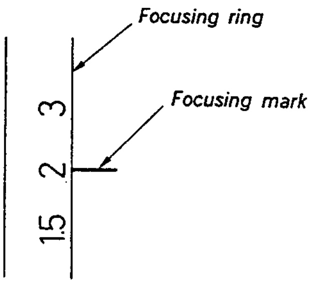


Fig. 1-7.

7) Loosen hexagonal socket head setscrew ❶ with an L-shaped hexagonal wrench. (See Fig. 1-9.)
8) By turning flange back adjusting pin ❷ while watching the monitor screen, attain the highest definition of a wedge at the Siemens star center on the screen. (Turn it several times to the right and left, to assure the definition to be the highest.)

Note:
Do not turn the adjusting pin excessively in either direction at a time.

9) While holding flange back adjusting pin ❷ down for any further turns, retighten hexagonal socket head setscrew ❶.
10) With zoom lever fixed at its WIDE end, turn focusing ring, and set it at a position that provides the highest definition image of the wedge. Check to assure the focusing mark position thus attained to be within the Fig. 1-8. range.

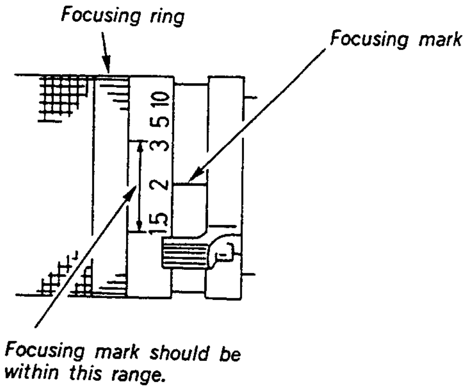


Fig. 1-8.

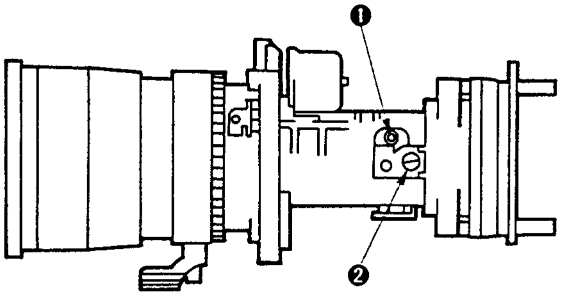


Fig. 1-9.

11) Turn zoom lever fully to its extreme TELE position.
12) By turning focusing ring, check to assure the position that provides the highest definition view of the wedge. Confirm that the focus ring is set within indication "2" at this time.

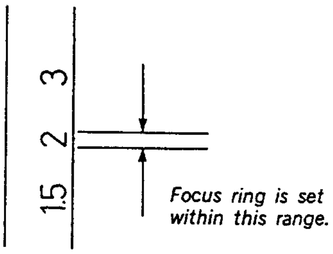


Fig. 1-10.

1-4-2. Camera DC-DC Converter Voltage Check (VC-23P board)

Measurement equipment	Digital voltmeter
5V check	
Specified value	5.1 ±0.05V dc
Measurement point	CN601 pin ⑤
7V check	
Specified value	7.0 ±0.15V dc
Measurement point	CN601 pin ④
15V check	
Specified value	15.0 ±0.2V dc
Measurement point	CN601 pin ①
30V check	
Specified value	30.0 ±1.0V dc
Measurement point	CN601 pin ②

[Check procedure]

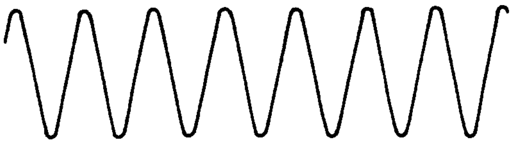
1) Make sure that the power voltages satisfy the respective specified values.

1-4-3. Clock Oscillation Frequency Adjustment (VC-23P board)

Measurement point	DT-62P board pin ⑰ (CL)
Measurement equipment	Frequency counter
Adjustment element	CT652
Specified value	14187500 ±168Hz

[Adjustment procedure]

1) Adjust to 14187500 ±168Hz with CT652.



(14187500 ±168Hz)

Fig. 1-11.

1-4-4 PLL Adjustment (VC-23P Board)

Measurement point	Land of R664 and R665 (See Fig. 1-12.)
Measurement instrument	Digital voltmeter
Adjustment element	CT651
Specified value	2.5 ±0.2Vdc

[Adjustment procedure]

1) Adjust to 2.5 ±0.2Vdc with CT651.

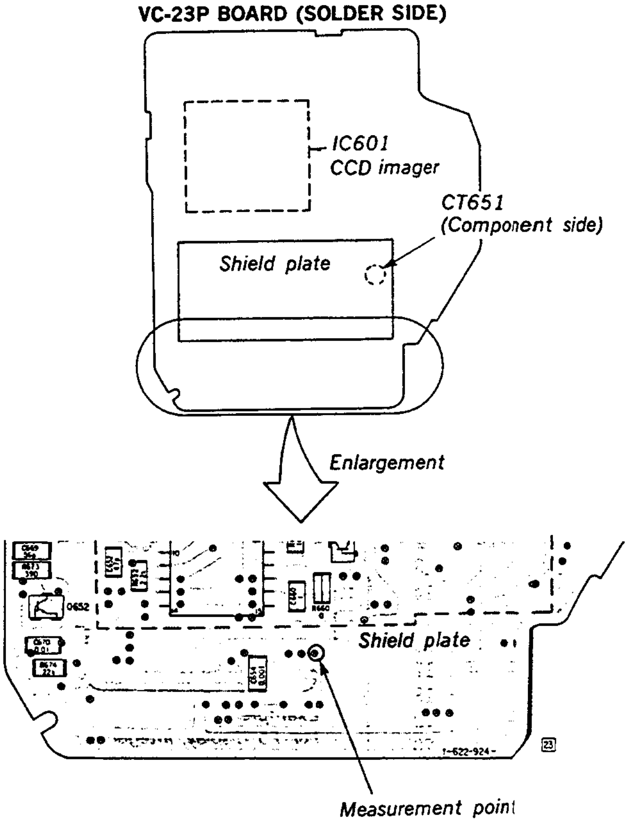

VC-23P BOARD (SOLDER SIDE)
IC601
CCD imager
CT651
(Component side)
Shield plate
Enlargement
Shield plate
Measurement point

Fig. 1-12.

1-4-5. Voltage Adjustment (VC-23P Board)

Subject	Optional
Measurement point	TP603 (IC601 pin ④)
Measurement equipment	Digital voltmeter
Adjustment element	RV601
Specified value	(Imager voltage) ±0.05V dc

Note:

Perform adjustment with CN701 removed and VC-24P board open.

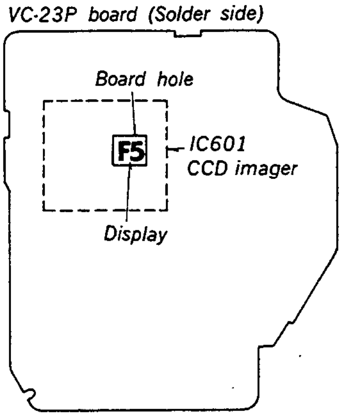
[Adjustment procedure]

Adjust to (Imager voltage) ±0.05V dc with RV601.

Note:

V_{SUB} specified voltage is indicated by the two digits "integer symbol" and "decimal".

Integer symbol	Integer value
1	1
.	.
.	.
.	.
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21


VC-23P board (Solder side)
Board hole
F5
IC601
CCD imager
Display

Example:
For F5 display, integer symbol is F → 15, and decimal value is 5 → 0.5, so V_{SUB} voltage is 15 + 0.5 = 15.5 (V dc).

Fig. 1-13.

1-4-6. Iris Set Adjustment (VC-24P board)

Subject	Color bar chart standard picture frame
Filter	ND filters 0.4 and 0.1
Measurement point	TP701 (CCD OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV701 (IRIS)
Specified value	250 ±5mV

[Adjustment procedure]

1) With ND filter not attached, adjust signal level to 250 ± 5mV with RV701. (Be sure to end the adjustment by turning RV701 in the direction which reduces the signal level.)
2) Attach ND filter 0.5 (0.4 + 0.1) in front of the lens and confirm that the signal level changes smoothly.
3) Remove the ND filter and confirm that the signal level is 250 ±15mV.
4) If the specifications are not satisfied, repeat steps 1) — 3).

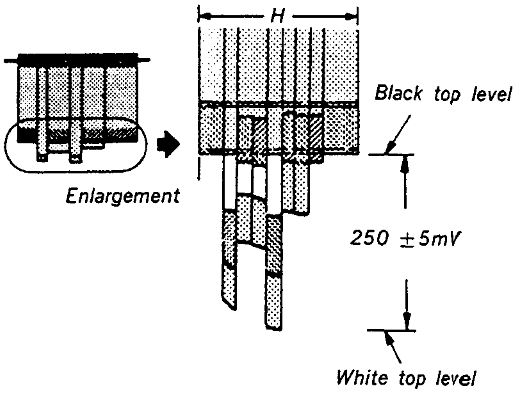

H
Black top level
Enlargement
250 ±5mV
White top level

Fig. 1-14.

1-4-7. AGC Set Adjustment (VC-24P board)

Subject	Color bar chart standard picture frame
Measurement point	TP784 (Y_L LINE)
Measurement equipment	Oscilloscope
Adjustment element	RV702 (AGC)
Specified value	450 ±10mV

Note:

Set the following RV on VC-24P board to mechanical center.

1. RV704 (MAX GAIN)

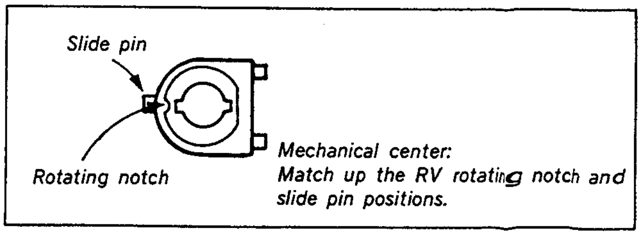

Slide pin
Rotating notch
Mechanical center:
Match up the RV rotating notch and slide pin positions.

Fig. 1-15.

[Adjustment procedure]

1) Adjust signal level to 450 ±10mV with RV702.

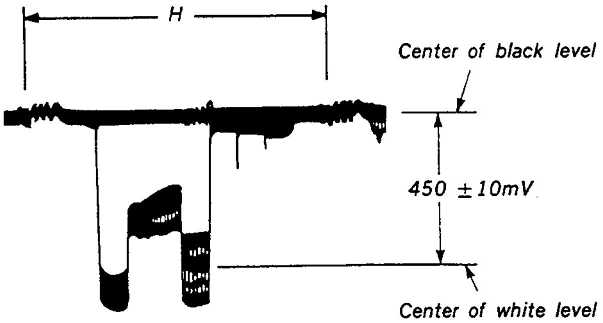


Fig. 1-16.

1-4-8. Matrix Adjustment

Connection: Connect the following points with a jumper wire before performing matrix adjustment. TP786 (CP-19P board pin ⑤) and TP802 (GND).

(1) Matrix Gain 2 Adjustment (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture frame
Measurement point	VC-24P board TP787 (R—Y OUT)
Measurement equipment	Oscilloscope
Adjustment equipment	CP-19P board RV002 (MATRIX GAIN 2)
Specified value	"green" : "red" = 0.9 : 3.0

[Adjustment procedure]

1) Confirm that white balance is in INDOOR mode (CN702 pin ① ($\overline{\text{WB INDR}}$) is low, pin ② ($\overline{\text{WB AUTO}}$) is high).
2) Adjust "green" and "red" levels to 0.9 : 3.0 with CP-19P board RV002.

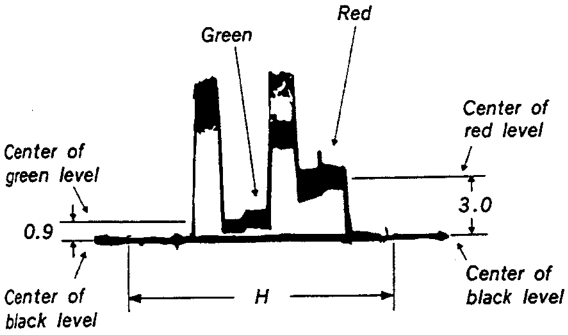


Fig. 1-17.

(2) Matrix Gain 1 Adjustment (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture frame
Measurement point	VC-24P board TP788 (B—Y OUT)
Measurement equipmemt	Oscilloscope
Adjustment element	CP-19P board RV001 (MATRIX GAIN 1)
Specified value	"yellow" : "blue" = 1.8 : 3.0

[Adjustment procedure]

1) Confirm that white balance is in INDOOR mode (CN702 pin ① ($\overline{\text{WB INDR}}$) is low, pin ② ($\overline{\text{WB AUTO}}$) is high).
2) Adjust "yellow" and "blue" levels to 1.8 : 3.0 with CP-19P board RV001.

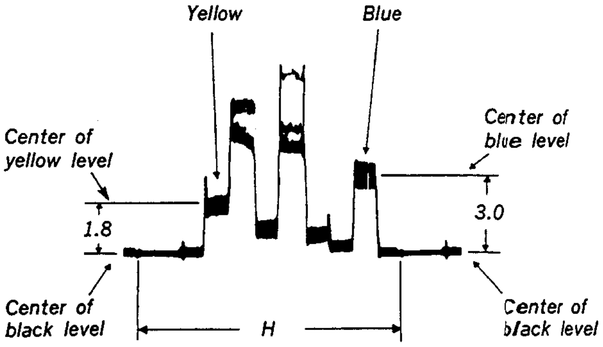


Fig. 1-18.

1-4-9. White Balance Adjustment (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture frame
Measurement point	CH1 (X): VC-24P board TP788 (B—Y OUT) CH2 (Y); VC-24P board TP787 (R—Y OUT)
Measurement equipment	Oscilloscope
Adjustment element	CP-19P board RV003 (R GAIN) CP-19P board RV004 (B GAIN)
Specified value	See Fig. 1-19.

[Adjustment procedure]

1) Confirm that white balance is in INDOOR mode (CN702 pin ① ($\overline{\text{WB INDR}}$) is low, pin ② ($\overline{\text{WB AUTO}}$) is high).
2) Adjust CP-19P board RV003 and RV004 so that the black and white luminescent spots become to each position on the following figure.

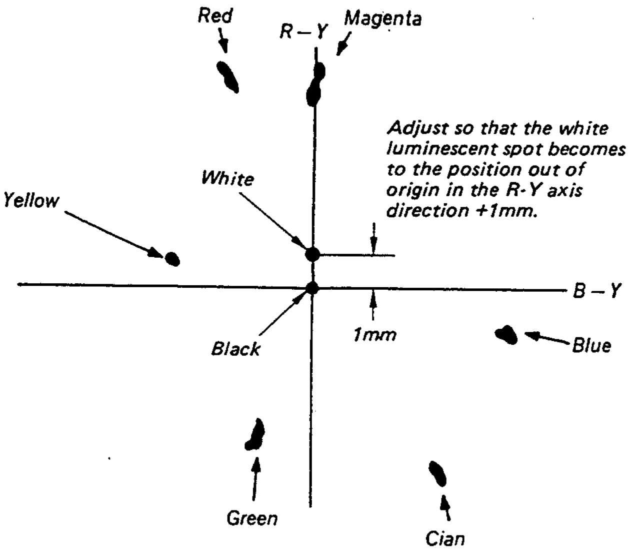

Red
R−Y
Magenta
Adjust so that the white luminescent spot becomes to the position out of origin in the R-Y axis direction +1mm.
White
Yellow
B−Y
Black
1mm
Blue
Green
Cian

Fig. 1-19.

1-4-10. Burst Phase and Burst Level Adjustment (VC-24P board)

Subject	All black (Place black cap over lens.)
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope (Trigger slope: +)
Adjustment element	RV806 (BURST LEVEL) and RV805 (BURST HUE)
Specified value	(Burst phase) should become a single line. (Burst level) 150 ±5mVp-p

Note:
When performing color reproductivity adjustment with a vectorscope, this adjustment becomes unnecessary.

[Adjustment procedure]

1) Make burst waveform into a single line with RV805. There are 2 points in the rotating range of RV805 in which the waveform becomes a single line. Select the one in which the color is reproduced correctly on the monitor screen.
2) Turn RV806 so that the burst amplitude becomes 150 ± 5mVp-p.

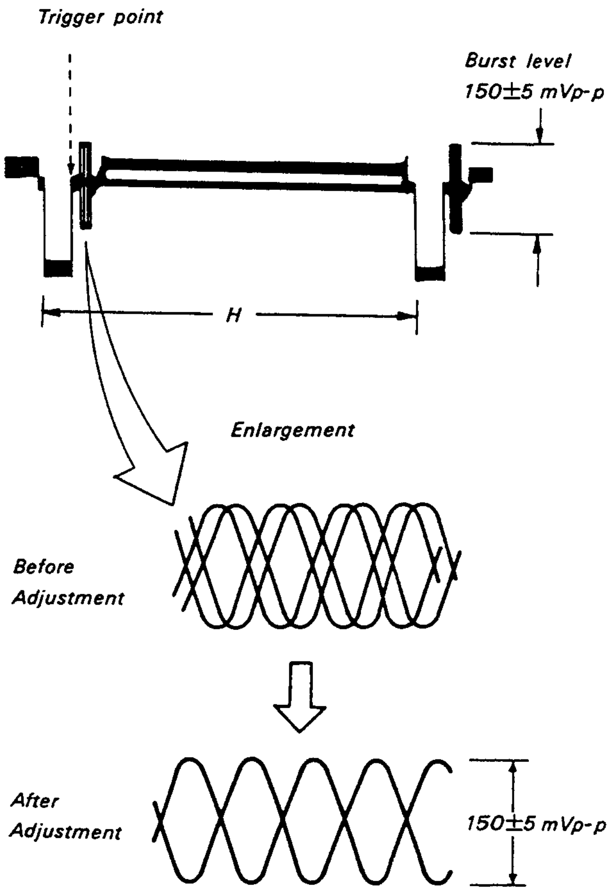

Trigger point
Burst level
150±5 mVp-p
H
Enlargement
Before Adjustment
After Adjustment
150±5 mVp-p

Fig. 1-20.

1-4-11. Color Reproducibility Adjustment (using vectorscope) (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture frame
Measurement point	VIDEO OUT pin
Measurement equipment	Vectorscope
Adjustment elements	VC-24P board RV806 (BURST LEVEL) VC-24P board RV805 (BURST HUE) CP-19P board RV006 (B—Y HUE) CP-19P board RV007 (R—Y HUE) CP-19P board RV008 (B—Y GAIN) CP-19P board RV009 (R—Y GAIN)
Specified value	Each color's luminescent spot must be within the color reproducibility frame.

Note 1:

Confirm that white balance is in INDOOR mode (VC-24P board CN702 pin ① ($\overline{\text{WB INDR}}$) is low, pin ② ($\overline{\text{WB AUTO}}$) is high).

Note 2:

Perform the adjustment after confirming that the burst luminescent spot is in the specified location and that the white luminescent spot matches the original spot. (If the white luminescent spot does not match the original spot, perform white balance adjustment (CP-19P board, RV003, RV004).

[Adjustment procedure]

1) Turn RV806 and RV805 of the VC-24P board and mutch the burst bright spot at the specified location (135° , 75%) on the vector scope.
2) Place the "red" luminescent spot within the color reproducibility frame with CP-19P board RV006 and RV009.
3) Place the "yellow" luminescent spot within the color reproducibility frame with CP-19P board RV007 and RV008.
4) Repeat steps 2) and 3) until the color luminescent spots are within the color reproducibility frame.
5) Set for OUTDOOR mode (VC-24P board CN702 pin ① ($\overline{\text{WB INDR}}$) is high, pin ② ($\overline{\text{WB AUTO}}$) is high) with the WHITE BALANCE button (FD-4P board S158).
6) Confirm that the white luminescent spot moves to the outdoor color reproducibility frame.

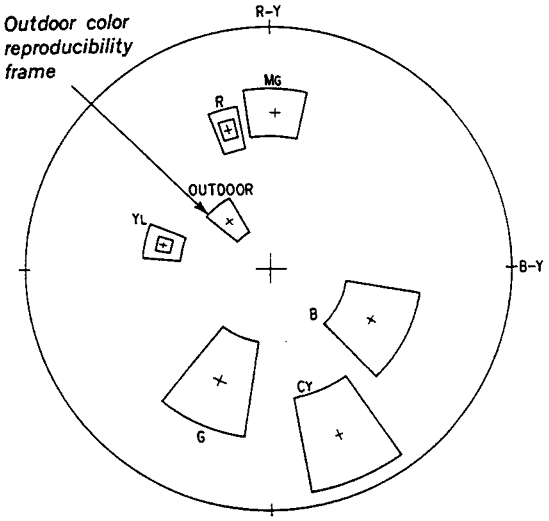


Fig. 1-21.

> **Note:**
> Use the sine chart and color reproduction standard frame for CCD-V90E when needed.

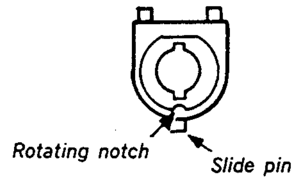
1-4-12. Color Reproducibility Adjustment (using oscilloscope)

Note:

Perform A. Gain Adjustment and B. Color Phase Adjustment after confirming that white balance is in INDOOR mode (VC-24P board CN702 pin ① ($\overline{\text{WB INDR}}$) is low, pin ② ($\overline{\text{WB AUTO}}$) is high).

A. Gain Adjustment (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture frame
Measurement point	VC-24P board TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment elements	CP-19P board RV008 (B—Y GAIN) CP-19P board RV009 (R—Y GAIN)
Specified value	"red" level: 240 ±16mVp-p "yellow" level: 176 ±12mVp-p



Mechanical center:
Match up the RV rotating notch and slide pin positions.

Fig. 1-22.

[Adjustment procedure]

1) Set CP-19P board RV006 (B—Y HUE) and RV007 (R—Y HUE) to mechanical center. (See Fig. 1-22.)
2) Adjust "red" amplitude to 240 ±16mVp-p with CP-19P board RV009. (Fig. 1-23 ①)
3) Adjust "yellow" amplitude to 176 ±12mVp-p with CP-19P board RV008. (Fig. 1-23 ②)

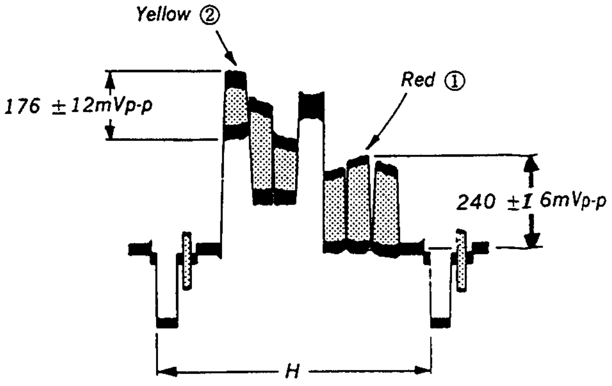


Fig. 1-23.

B. Color Phase Adjustment (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture fame
Measurement points	CH1 (X): VC-24P board TP788 (B—Y) CH2 (Y): VC-24P board TP787 (R—Y)
Measurement equipment	Oscilloscope (X—Y mode) *Use oscilloscope color reproducibility frame.
Adjustment elements	CP-19P board RV006 (B—Y HUE) CP-19P board RV007 (R—Y HUE)
Specified value	Each color luminescent spot must be within the color reproducibility frame. (See Fig. 1-24.)

[Adjustment procedure]

1) Match up the black luminescent spot to the color reproducibility frame original spot on the oscilloscope.
2) Confirm that the white and black luminescent spots match.
   (If not, confirm that white balance is in INDOOR mode, then perform white balance adjustment (CP-19P board RV003, RV004).
3) Place the yellow and red luminescent spots within the color reproducibility frame with CP-19P board RV006 and RV007.
   (Confirm that other color luminescent spots are within the color reproducibility frames.)
4) Set for OUTDOOR mode (VC-24P board CN702 pin ① ($\overline{\text{WB INDR}}$) is high, pin ② ($\overline{\text{WB AUTO}}$) is high) with the WHITE BALANCE button (FD-4P board S158).
5) Confirm that the white luminescent spot moves to the outdoor color reproducibility frame.

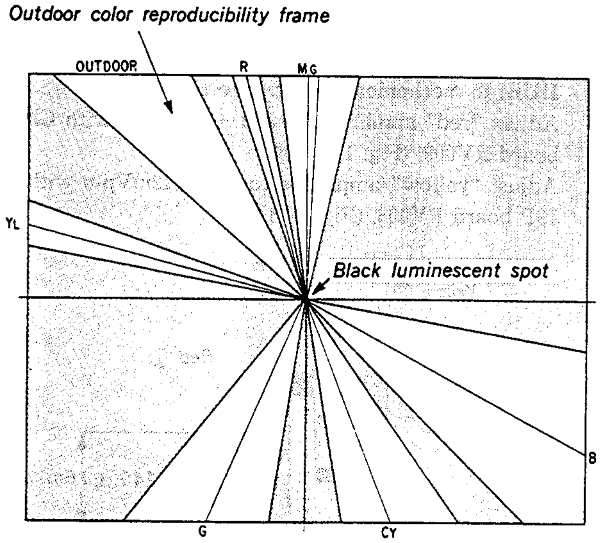


Fig. 1-24.

1-4-13. SET UP Adjustment (VC-24P board)

Subject	All black (Place black cap over lens.)
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV803 (SET UP)
Specified value	10 ±5mV

[Adjustment procedure]

1) Adjust SET UP level to 10 ±5mV with RV803.

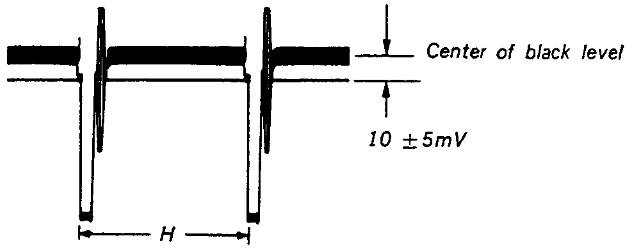


Fig. 1-25.

1-4-14. Sync Level Adjustment (VC-24P board)

Subject	All black (Place black cap over lens.)
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV804 (SYNC LEVEL)
Specified value	150 ±5mVp-p

[Adjustment procedure]

1) Adjust burst level to 150 ±5mVp-p with RV804.

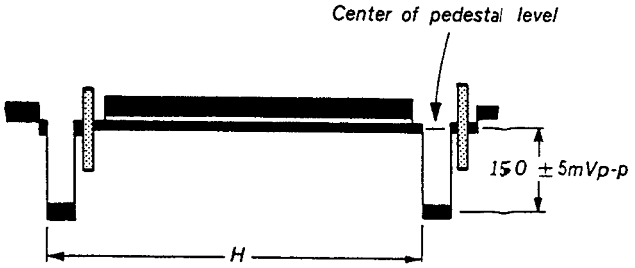


Fig. 1-26.

1-4-15. Y Level Adjustment (VC-24P board)

Subject	Color bar chart standard picture frame
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV801 (Y LEVEL)
Specified value	350 ±5mV

Note:

Turn RV802 (WC) fully clockwise (↻) and maximize TP801 signal level.

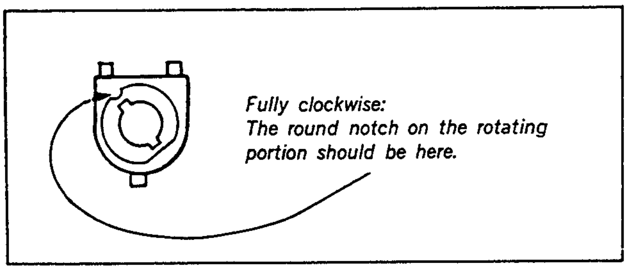

Fully clockwise:
The round notch on the rotating portion should be here.

Fig. 1-27.

[Adjustment procedure]

1) Adjust Y level to 350 ±5mV with RV801.
2) Perform aperture adjustment and white clip adjustment.

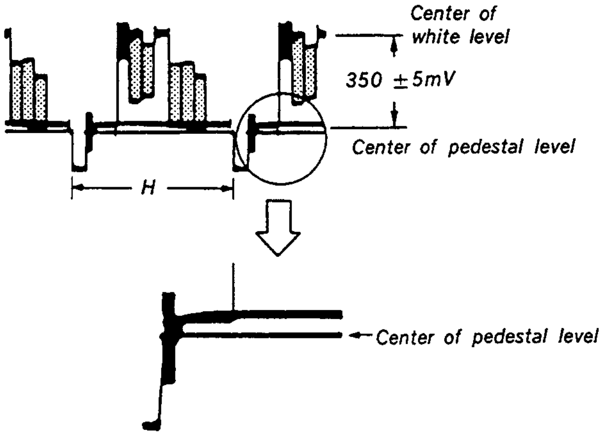

Center of white level
350 ±5mV
Center of pedestal level
H
Center of pedestal level

Fig. 1-28.

1-4-16. Aperture Adjustment (VC-24P board)

Subject	Color bar chart standard picture frame
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV807 (APL)
Specified value	15 ±5mV

[Adjustment procedure]

1) Adjust with RV807 so that the bottom peak between "green" and "white" is set at 15 ±5mV above the pedestal level.

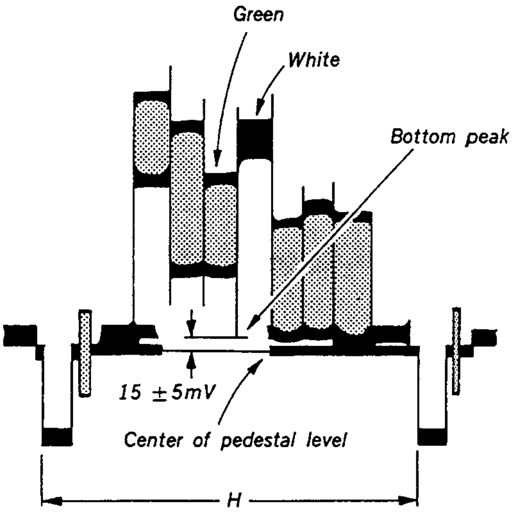

Green
White
Bottom peak
15 ±5mV
Center of pedestal level
H

Fig. 1-29.

1-4-17. White Clip Adjustment (VC-24P board)

Subject	High luminance pattern
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV802 (WC)
Specified value	420 ±10mV

[Adjustment procedure]

1) Adjust the signal level to 420 ±10mV with RV802.

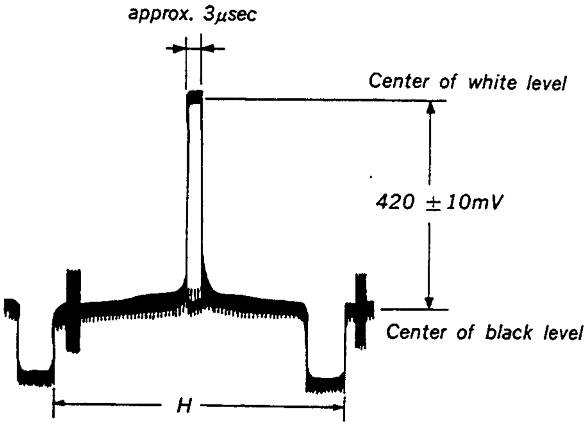


Fig. 1-30.

1-4-18. Max Gain Adjustment (VC-24P board)

Subject	Color bar chart standard picture frame
Filter	ND filters 0.9 (2 pcs), 0.4 (1 pcs)
Measurement point	TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV704 (MAX GAIN)
Specified value	180 ±5mV

[Adjustment procedure]

1) Mount ND filter 2.2 (0.9 + 0.9 + 0.4) on the lens.
2) Adjust to 180 ±5mV with RV704.

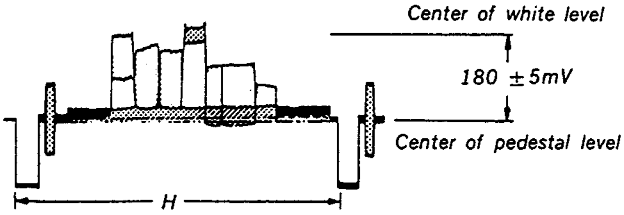


Fig. 1-31.

1-4-19. Chroma Pedestal Adjustment (CP-19P/VC-24P boards)

Subject	Color bar chart standard picture frame
Filter	ND filters 0.9 (2 pcs), 0.4 (1 pcs)
Measurement point	VC-24P board TP801 (CAM OUT)
Measurement equipment	Oscilloscope
Adjustment element	CP-19P board RV005
Specified value	With 1.8 ND filter: "Cyan" amplitude more than 120mVp-p with 2.2ND filter: "Cyan" amplitude more than 120mVp-p

[Adjustment procedure]

1) Mount ND filter 1.8 (0.9 + 0.9) on the lens.
2) Confirm that "cyan" amplitude is more than 120mVp-p.
3) Remove ND filter 1.8 and mount ND filter 2.2 (0.9 + 0.9 + 0.4).
4) Confirm that "cyan" amplitude is more than 120mVp-p.
5) If the above specifications are not satisfied, adjust CP-19P board RV005 and repeat steps 1) — 4).

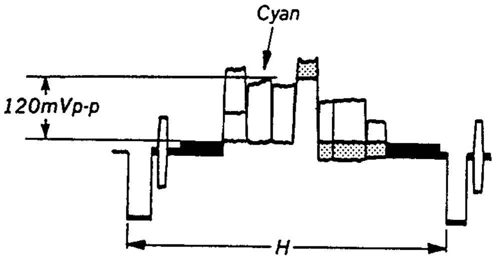


Fig. 1-32.

1-4-20. Auto-following White Balance Adjustment (VC-24P board)

Subject	All white pattern ＊Note 1
Measurement point	CH1: TP852 (R CONT) CH2: TP851 (B CONT)
Measurement equipment	Oscilloscope (DC range)
Adjustment element	RV851
Specified value	CH1: "L" (0.5V) CH2: "H" (1.9V)

Note 1:

Allow light to hit the white balance sensor (SB851) by passing through a white dispersing plate. A camera white lens cap can be used for the white dispersing plate.

Note 2:

Correct adjustment can not be done if light other than that from the pattern box hits the white balance sensor. Adjustment should preferably be done in a dark room, but if this is not possible, take the following measures before performing the adjustment.

1. Place the camera on black paper.
   (This is also necessary even when performing the adjustment in a dark room.)
2. Make sure the camera and pattern box are less than 0.5m apart. (Focusing not required)
3. Cover the white balance sensor with black paper so that light other than that from the pattern box does not hit it.

[Connection]

Connect as follows for test mode.

1. Connect CN702 pin ① and GND with a jumper wire.
2. Connect CN702 pin ② and GND with a jumper wire.

[Adjustment procedure]

1) Turn RV851 and confirm that CH1 takes the two values "L" (0.5V dc) and "H" (1.0V dc) and that CH2 takes the two values "L" (1.0V dc) and "H" (1.9V dc).
2) Slowly turn RV851 and stop at the point where CH1 is "L" (0.5V dc) and CH2 is "H" (1.9V dc).

1-4-21. Auto-following White Balance Operation Check

Subject	All white pattern ＊Note
Filter	Color temperature correction filter C22
Measurement point	Check on monitor TV
Measurement equipment	

Note:

Refer to Note 2 in the preceding item.

[Check procedure]

1) Set for AUTO WHITE BALANCE mode with the WHITE BALANCE button (FD-4P board S158).
2) Cover the camera with black paper so that light other than that from the pattern box does not enter the white balance sensor (SB851).
3) Confirm that there is no color on the monitor picture.
4) Place the color temperature correction filter C22 on the white balance sensor. (Use black paper to make sure that light other than that from the filter does not enter.)
5) Confirm that the monitor picture becomes a light orange color. (Response takes 2—3 seconds.)
6) Return the WHITE BALANCE button to INDOOR mode.

1-4-22. Manual IRIS Check

Subject	Color bar chart standard picture frame
Measurement point	Check on monitor TV
Measurement equipment	
Specified value	CLOSE: All black OPEN: Yellow disappears

[Check procedure]

1) Turn IRIS control (FD-4P board RV151) fully to the CLOSE side.
2) Confirm that the monitor TV picture is all black.
3) Turn IRIS control fully to the OPEN side.
4) Confirm that the yellow portion of the color bar chart on the monitor TV picture disappears.

1-5. AUTO FOCUS SYSTEM ADJUSTMENT

1. Connect flexible board FP-59 to AF-32 board CN002 when performing this adjustment.
2. Place the sign chart 2m (or 0.9m) from the lens reference surface as shown in Fig. 1-33.
3. Open the IRIS with the IRIS control (FD-4P board RV151).

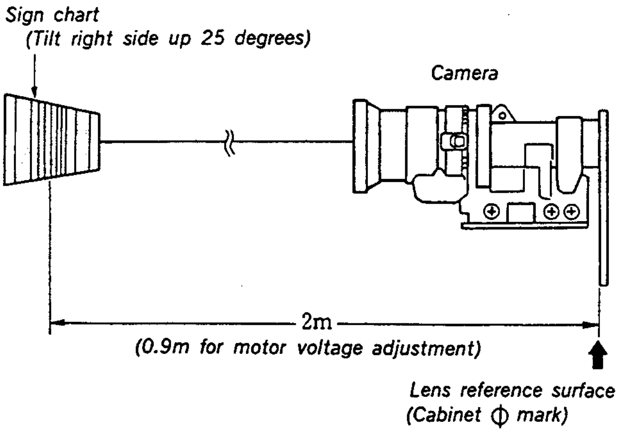

Sign chart
(Tilt right side up 25 degrees)
Camera
2m
(0.9m for motor voltage adjustment)
Lens reference surface
(Cabinet ⌽ mark)

Fig. 1-33.

1-5-1. AD Converter Reference Voltage Adjustment (AF-32 board)

Subject	Optional
Measurement point	Both ends of RV1 (Fig. 1-34)
Measurement equipment	Digital voltmeter
Adjustment element	RV1
Specified value	2.04 ±0.05V dc

[Adjustment procedure]

1) Set for AUTO FOCUS mode with the FOCUS button (FD-4P board S162).
2) Adjust to 2.04 ±0.05V dc with RV1.

AF-32 board (SOLDER SIDE)

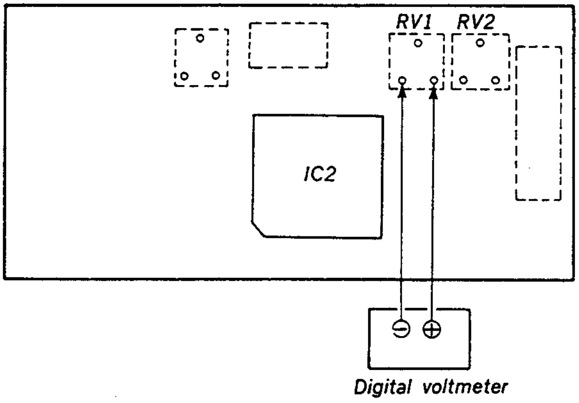

RV1
RV2
IC2
Digital voltmeter

Fig. 1-34.

1-5-2. X_P Adjustment (AF-32 board)

Subject	Sign chart (2.0m in front of lens reference surface (⌽ mark))
Measurement points	CH1: CN2 pin ③ CH2: CN2 pin ④
Measurement equipment	Oscilloscope (DC range)
Adjustment element	RV2
Specified value	Pulses should be output alternately from CH1 and CH2.

Zoom lever setting: near 30mm

[Adjustment procedure]

1) Set for AUTO FOCUS mode with the FOCUS button (FD-4P board S162).
2) Connect AF-32 board ALIGNMENT land (IC002 pin ㊶... See Fig. 1-36.) and GND momentarily to set adjustment mode.

   Note:
   After returning to MANUAL mode, returning to AUTO FOCUS mode again will result in release of adjustment mode.
3) Turn the focus ring and set focus indication to the center of "2".
4) Adjust with RV2 so that pulses are output alternately from CH1 and CH2.

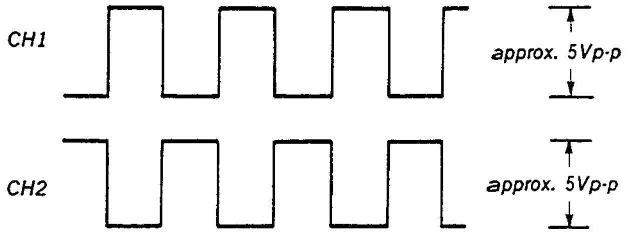


Fig. 1-35.

AF-32 board (COMPONENT SIDE)

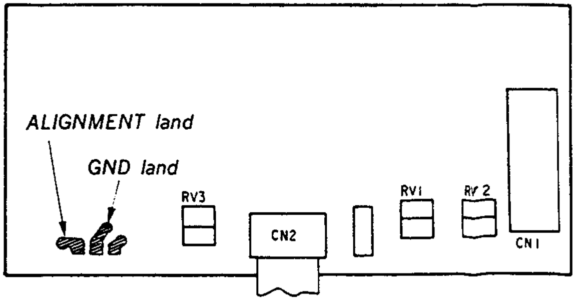

ALIGNMENT land
GND land
RV3
CN2
RV1
RV2
CN1

Fig. 1-36.

1-5-3. Z Axis Adjustment

Subject	Sign chart (2.0m in front of lens reference surface (Φ mark))
Specified value	TELE: ±1mm WIDE: +10mm −7mm

[Adjustment procedure]

1) Set for AUTO FOCUS mode with the FOCUS button (FD-4P board S162).
2) Set zoom lever to TELE (72mm).
3) Loosen Z frame screw ❶. (Fig. 1-38.)
4) Remove adhesive.
5) Move the Z frame forward (A ←→B) so that the focus ring stops at the center of "2". (Fig. 1-38, 37.)
6) Tighten Z frame screw ❶. (Fig. 1-38.)
7) Set zoom lever to WIDE (12mm).
8) Rotate the focus ring to 1.2m and release.
9) Confirm that the focus ring stops within +10, −7mm from the center of "2". (Fig. 1-37.)
10) Turn the focus ring to ∞ and release.
11) Confirm that the focus ring stops within the same range.
12) If the specifications are not satisfied, repeat steps 2) — 11).

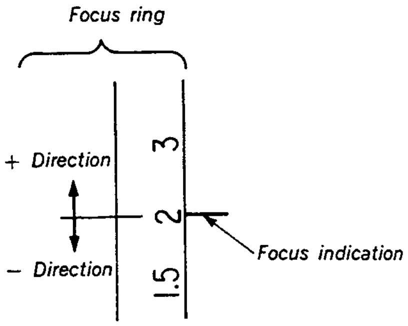


Fig. 1-37.

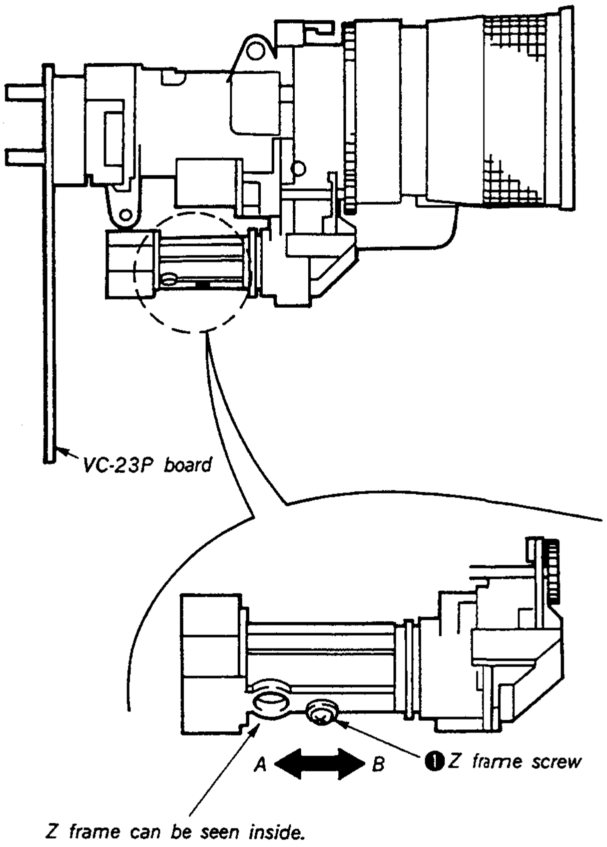


Fig. 1-38.

1-5-4. Motor Voltage Adjustment (AF-32 board)

Subject	Sign chart (0.9m in front of lens reference surface (Φ mark))
Measurement equipment	Stopwatch
Adjustment element	RV3
Specified value	2.0 ±0.5 seconds

Zoom lever setting: near 20mm

[Adjustment procedure]

1) Set to MANUAL mode with FOCUS button (FD-4P board S162).
2) Set focus ring to infinity (∞).
3) Press FOCUS button.
4) Measure the time from the moment the FOCUS button is pressed and the focus ring rotates until it reaches the short-distance end (1.2m).
5) If the specification is not satisfied, adjust RV3 and repeat steps 1) — 4).

1-5-5. Auto Focus Check

Subject	Sign chart (2.0m in front of lens reference surface (⏀mark))
Specified value	TELE: within ±1.5mm from just focus point for MANUAL WIDE: within ±20mm from just focus point for MANUAL

[Adjustment procedure]

1) Set to MANUAL mode with FOCUS button (FD-4P board S162).
2) Set zoom lever to TELE (72mm).
3) Turn the focus ring and adjust focus. Confirm that the focus ring is within ±1.5mm from the center of the "2" indication at this time. Remember the focus indicator position.
   (Perform flange back adjustment if the specifications are not satisfied.)

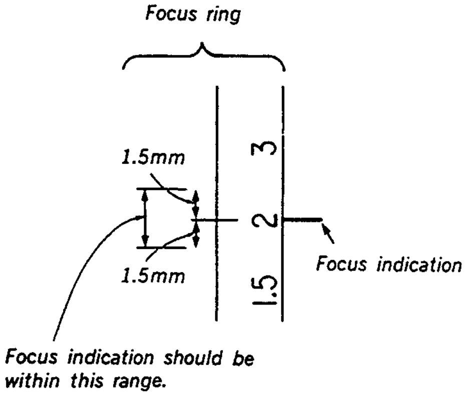
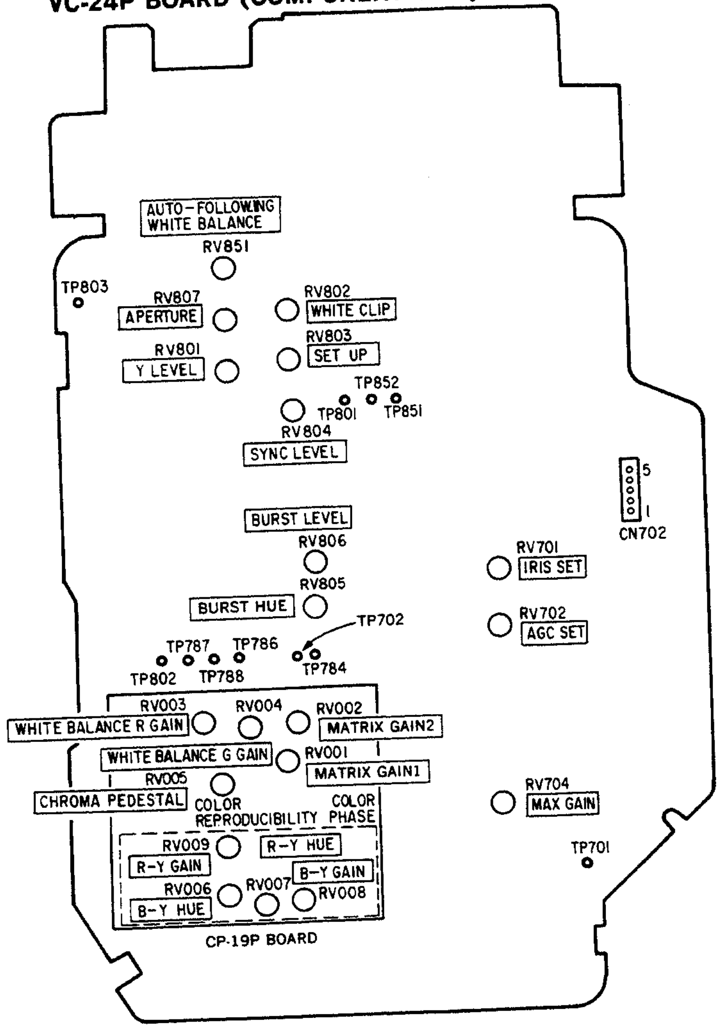


Fig. 1-39.

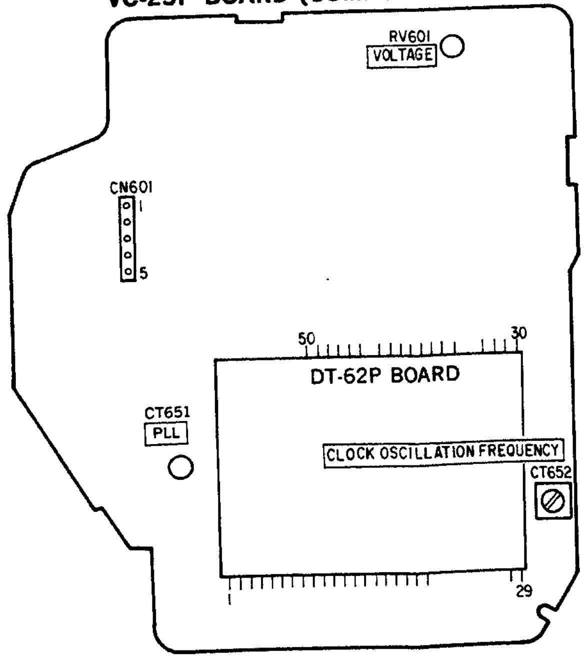
4) Set for AUTO FOCUS mode with the FOCUS button.
5) Turn the focus ring to ∞ and release.
6) Confirm that the position where the focus ring stops is within ±1.5mm of the focus position in step 3).
7) Turn the focus ring to the 1.2m position and release.
8) Confirm that the position where the focus ring stops is within ±1.5mm of the focus position in step 3).
9) Fix the zoom lever at WIDE (12mm).
10) Repeat steps 5) — 7). The focus specification for WIDE is with ±20mm of the focus indication position in step 3).

1-6. ADJUSTMENT ELEMENT LOCATION

VC-24P BOARD (COMPONENT SIDE)


AUTO-FOLLOWING WHITE BALANCE
RV851
TP803
RV807
APERTURE
RV802
WHITE CLIP
RV803
SET UP
RV801
Y LEVEL
TP852
TP801
TP851
RV804
SYNC LEVEL
5
1
CN702
BURST LEVEL
RV806
RV701
IRIS SET
RV805
BURST HUE
TP702
RV702
AGC SET
TP787
TP786
TP784
TP802
TP788
RV003
RV004
RV002
WHITE BALANCE R GAIN
MATRIX GAIN2
WHITE BALANCE G GAIN
RV001
MATRIX GAIN1
RV005
CHROMA PEDESTAL
COLOR REPRODUCIBILITY
COLOR PHASE
RV704
MAX GAIN
RV009
R-Y HUE
R-Y GAIN
B-Y GAIN
TP701
RV006
RV007
RV008
B-Y HUE
CP-19P BOARD

VC-23P BOARD (COMPONENT SIDE)


RV601
VOLTAGE
CN601
1
5
50
30
DT-62P BOARD
CT651
PLL
CLOCK OSCILLATION FREQUENCY
CT652
1
29

S. 187
und
S. 189/190
sind leer!

SECTION 2
MECHANICAL ADJUSTMENT (Video)

2-1. PREPARATION FOR MECHANISM CHECK, ADJUSTMENT AND REPLACEMENT

Refer to the Service Manual, "2. Disassembly" for removal of the cabinet and boards.
Adjustment is done with the mechanism in EJECT state. (Refer to "2-1-5. Handling of Mode Selector" for information on putting the mechanism into EJECT state.)

2-1-1. Cassette Arm Assembly (Fig. 2-1.)

1. Removal
1) Remove screws ❶, ❷, ❸ and ❹.
2) Remove Guard ass'y tape ❺.
3) Remove cassette arm assembly ❻.

2. Mounting
1) Mount cassette arm assembly ❻ on the set so that the two pins ❼ go into the specified locations.
2) Mount Guard ass'y tape ❺.
3) Loosely tighten screws ❶ and ❷ and tighten screws ❸ and ❹.
4) Tighten screws ❶ and ❷.

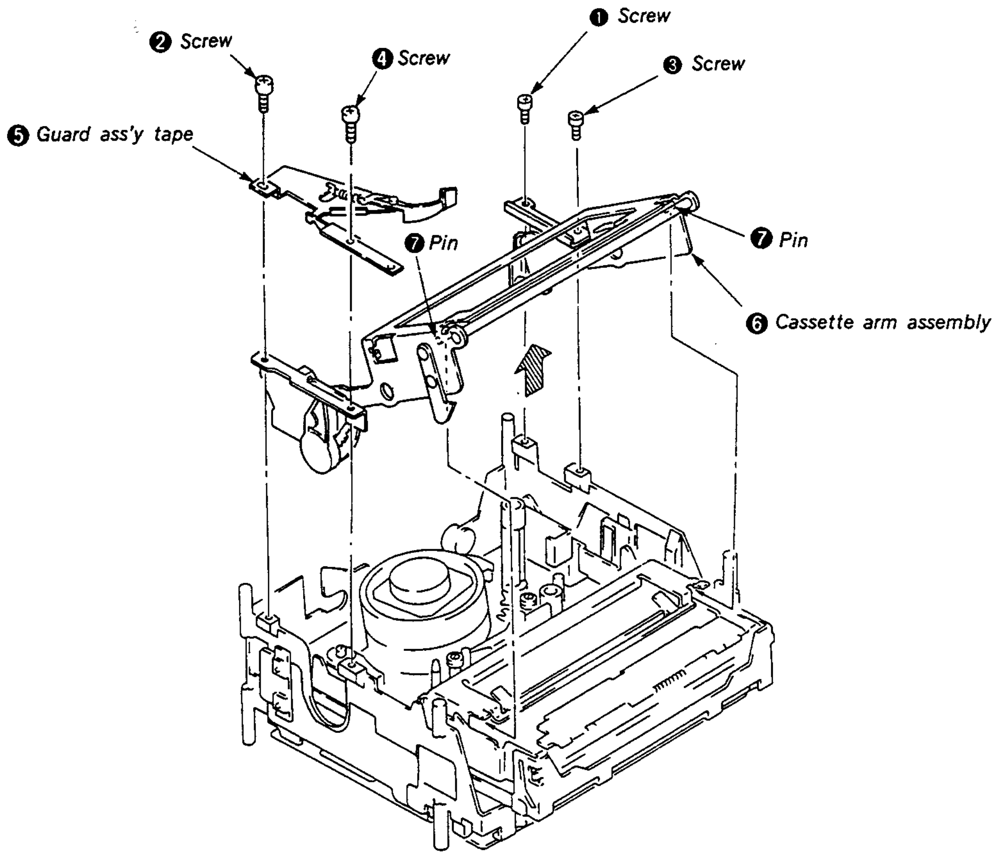

❶ Screw
❷ Screw
❹ Screw
❸ Screw
❺ Guard ass'y tape
❼ Pin
❼ Pin
❻ Cassette arm assembly

Fig. 2-1.

2-1-2. LS Cassette Compartment Assembly (Fig. 2-2.)

1. Removal

1) Remove screws ❶, ❷, ❸ and ❹.
2) Press LS frame ❻ hole ❽ in the direction of arrow Ⓐ and release pins ❺ and ❾. (Pin (C) ❺ is longer, so release pin (B) ❾ first.)
3) Remove LS cassette compartment assembly ❼.

2. Mounting

1) Mount LS cassette compartment assembly ❼ on the set.
2) Press LS frame ❻ hole ❽ in the direction of arrow Ⓐ and insert the two pins ❺ and ❾. (Insert the longer pin (C) ❺ first.)
3) Loosely tighten screws ❸ and ❹ and then tighten the screws in the order ❶, ❷, ❸ and ❹.

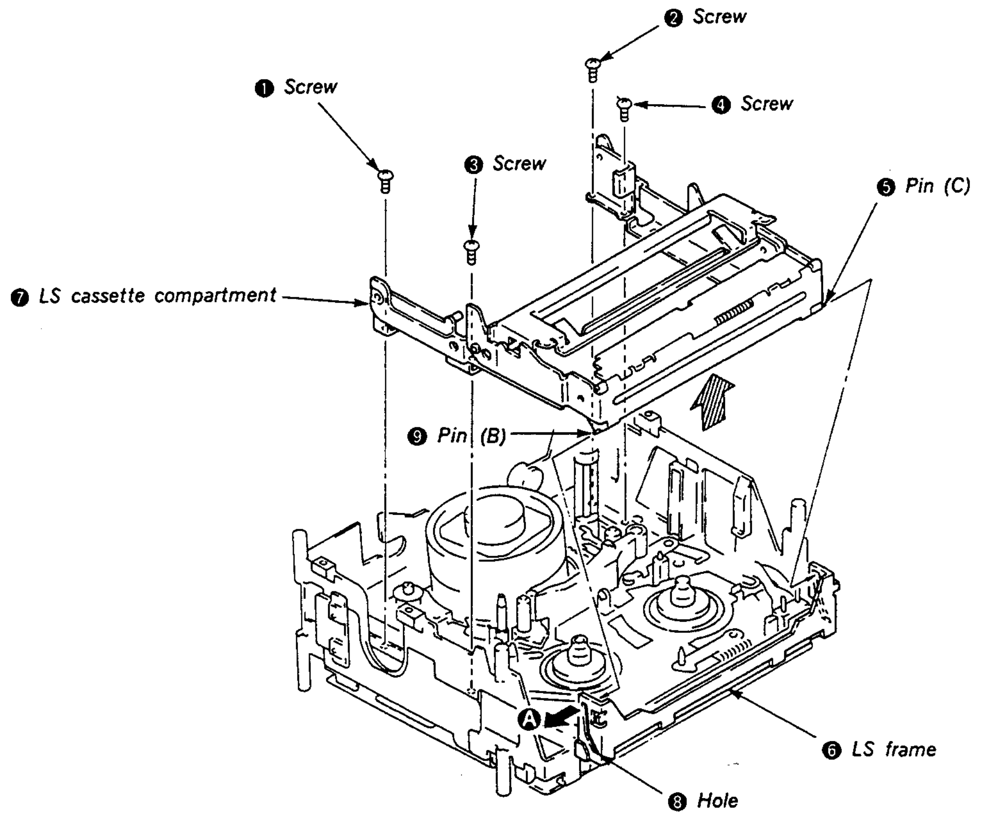

❷ Screw
❶ Screw
❹ Screw
❸ Screw
❺ Pin (C)
❼ LS cassette compartment
❾ Pin (B)
Ⓐ
❻ LS frame
❽ Hole

Fig. 2-2.

2-1-3. Removing Cassette Tape when in Loading State

1) Open VA-36 board, referring to the Service Manual, "2. Disassembly, 2-7".
2) Connect the mode selector, referring to 2-1-5.
   Note:
   The modes indicated by ☐ are the modes set by pressing the mode selector button.
3) Set for GUIDE LOAD mode and move the tape guides from the positions shown in Fig. 2-4 to those shown in Fig. 2-5.
4) Rotate the capstan motor rotor ❶ in the direction of the arrow and take the tape up inside the cassette. (Fig. 2-3.)
   Note:
   Even in GUIDE LOAD mode, if the tape guides are closer to the cassette than the positions shown in Fig. 2-5, the tape can not be taken up.
5) Check that the tape has been taken up completely, set for EJECT mode and remove the cassette.

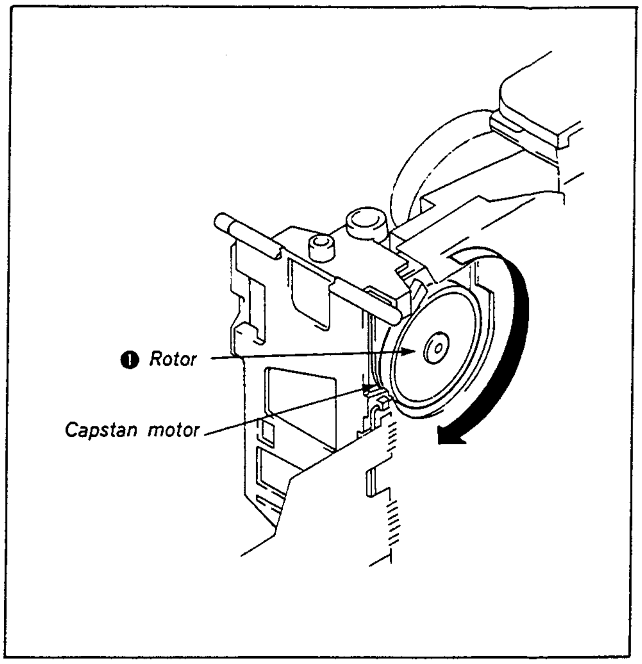

❶ Rotor
Capstan motor

Fig. 2-3.

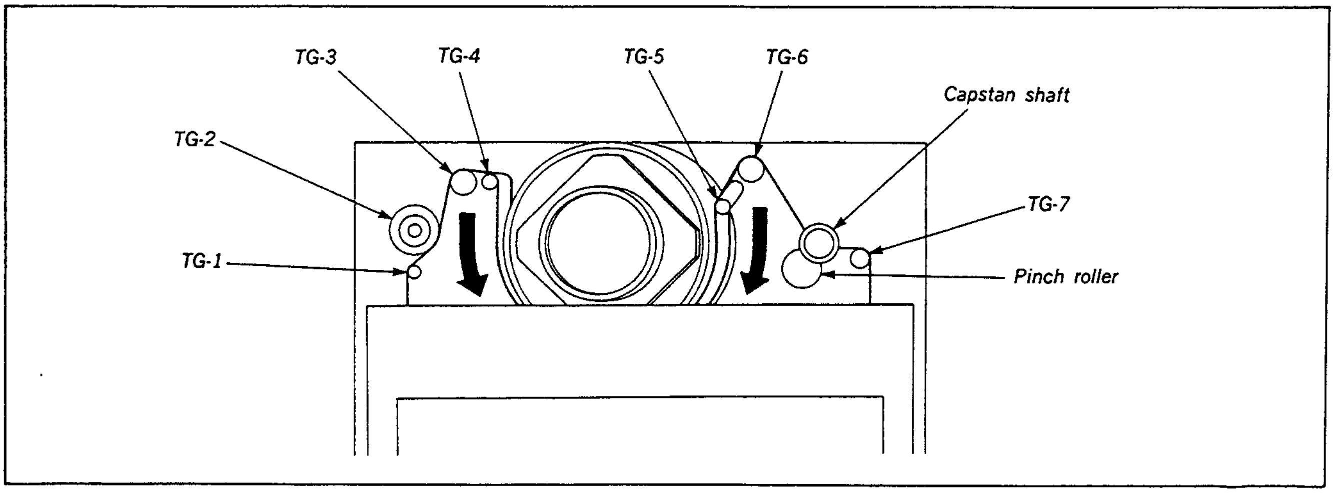

TG-3
TG-4
TG-5
TG-6
Capstan shaft
TG-2
TG-7
TG-1
Pinch roller

Fig. 2-4.

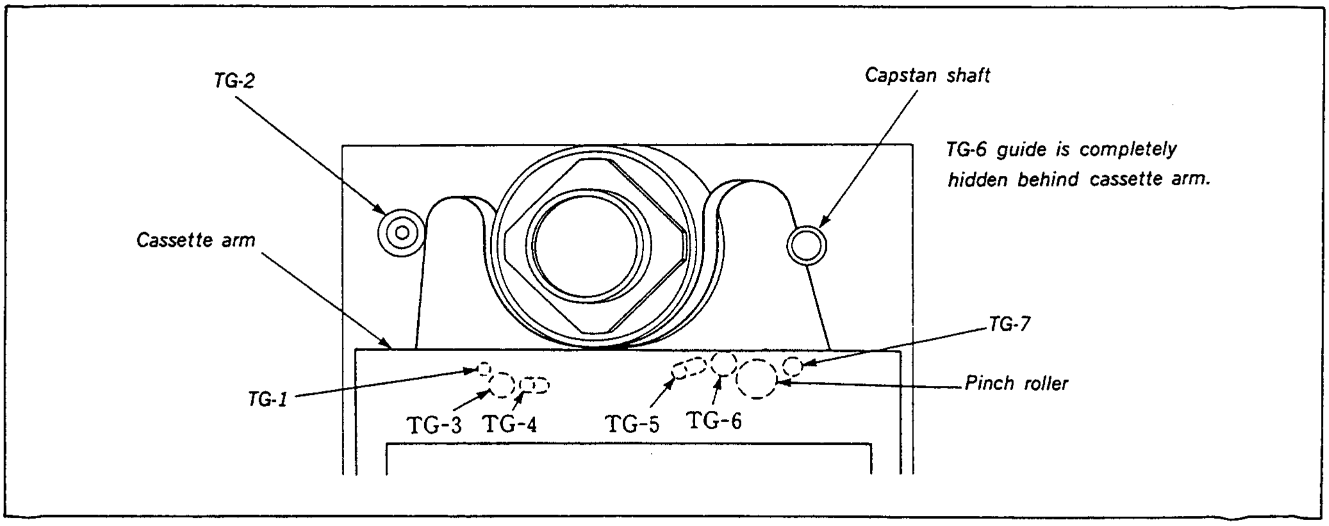

TG-2
Capstan shaft
TG-6 guide is completely hidden behind cassette arm.
Cassette arm
TG-7
TG-1
Pinch roller
TG-3
TG-4
TG-5
TG-6

Fig. 2-5.

2-1-4. Operation with Cassette and Cassette Arm Assembly and LS Cassette Compartment Removed

1. Putting into Loading State (Fig. 2-6.)

1) Connect FP-63 flexible board ❷ to flexible connector ❶ (CN153).
2) Connect one end of FP-59 flexible board ❹ to flexible connector ❸ (CN151).
3) Apply DC 6–7V to battery pin ❺ .
4) Place cap ❼ on LED assembly ❻ .
5) Press push SW ❽ pin (ON state) and secure with adhesive tape ❾ .
6) The set will go into loading state when the return prevention arm ❿ is pressed in the direction of arrowⒶ.

2. Putting into EJECT

1) Turn EJECT SW ⓫ on.

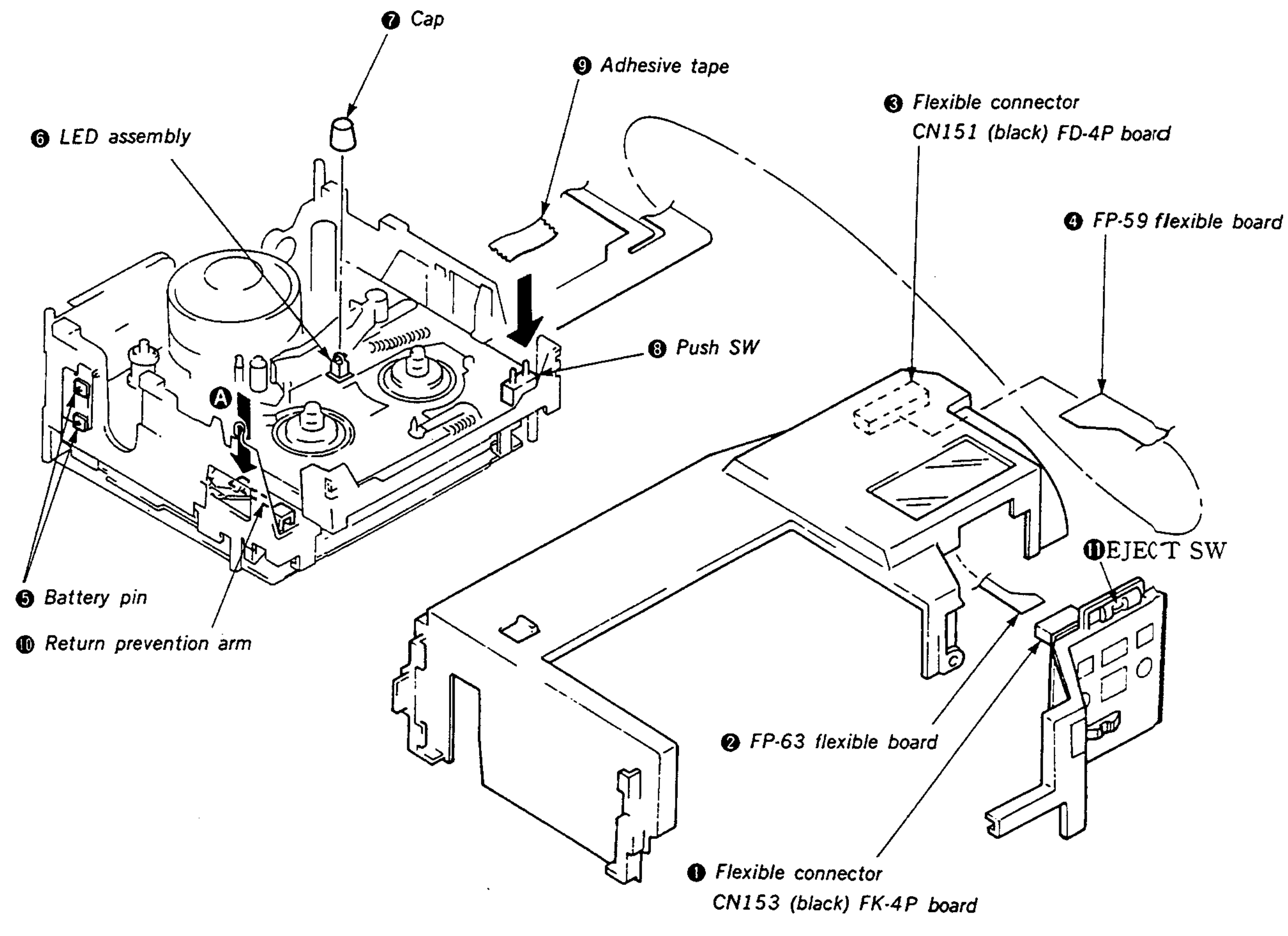

❼ Cap
❾ Adhesive tape
❸ Flexible connector CN151 (black) FD-4P board
❻ LED assembly
❹ FP-59 flexible board
❽ Push SW
Ⓐ
⓫EJECT SW
❺ Battery pin
❿ Return prevention arm
❷ FP-63 flexible board
❶ Flexible connector CN153 (black) FK-4P board

Fig. 2-6.

2-1-5. Handling of Mode Selector

- Mount MODE SELECTOR II panel. (Fig. 2-7)

1. Names of Parts (Fig. 2-8.)

2. Connection (Fig. 2-9.)

1) Release the three claws ❶ and remove lithium cover ❷.
2) Remove FP-57 flexible board connector with a blade screwdriver or the like.

   Note:

   Be careful not to pull the flexible board when removing FP-57. If it is pulled too hard, the pattern may be cut.
3) Plug in MODE SELECTOR II conversion connector.
4) Plug M-SW connector into MODE SELECTOR II conversion connector.

3. Handling

1) Use M mode switching button only.
2) During selection, "BLANK" with light up when no mode is selected.
3) When the right side M mode switching button is pressed continuously, EJECT → USE → GUIDE LOAD → REC → READY will light up in that order.
4) For READY --→ EJECT, press the left side switching button for the target mode.

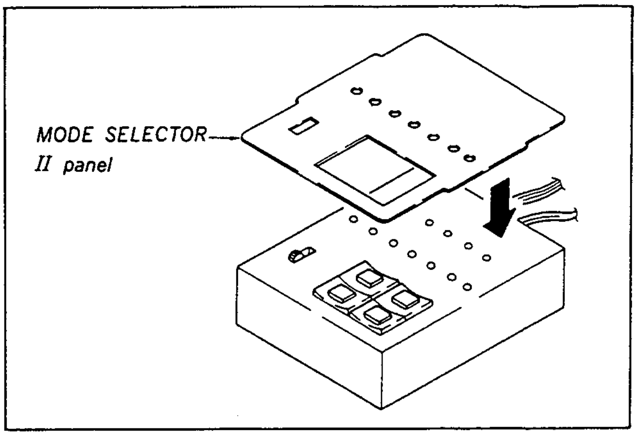

MODE SELECTOR II panel

Fig. 2-7.

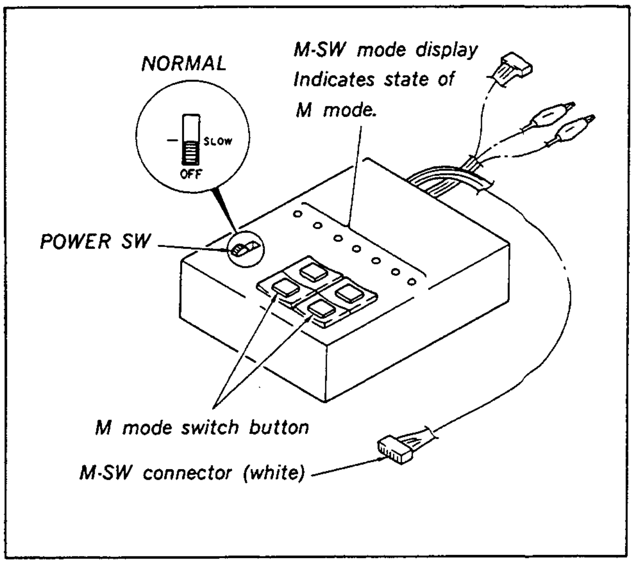

NORMAL
SLOW
OFF
M-SW mode display Indicates state of M mode.
POWER SW
M mode switch button
M-SW connector (white)

Fig. 2-8.

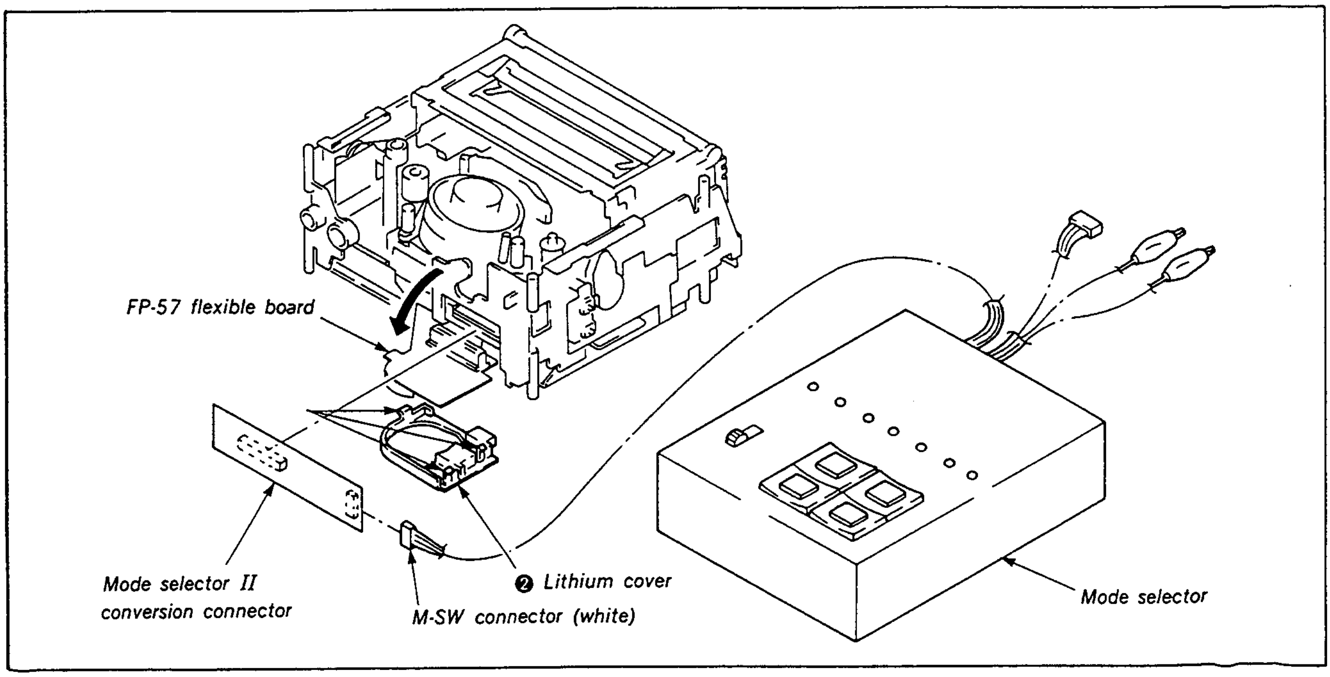
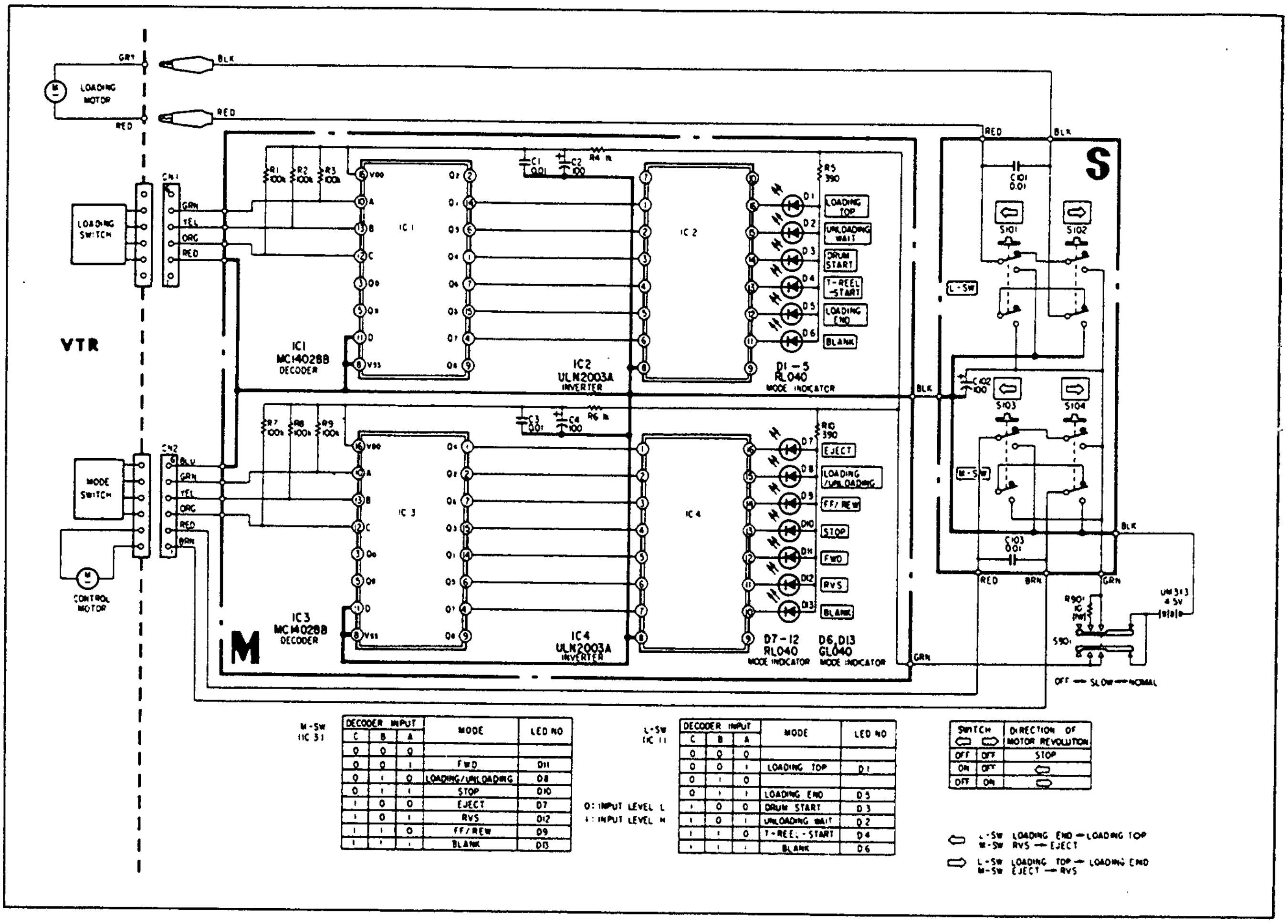

FP-57 flexible board
Mode selector II conversion connector
❷ Lithium cover
M-SW connector (white)
Mode selector

Fig. 2-9.

4. Mode Selector Schematic Diagram


LOADING MOTOR
GRY
BLK
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
VTR
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
C1 0.01
C2 100
C3 0.01
C4 100
R4 1k
R6 1k
R5 390
R10 390
D1-5 RL040 MODE INDICATOR
D7-12 RL040 MODE INDICATOR
D6,D13 GL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
S
M
C101 0.01
C102 100
C103 0.01
S101
S102
S103
S104
L-SW
M-SW
R901
S901
UM3×3 4.5V
OFF → SLOW → NOMAL

M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

5. Mode Selector Parts List

Ref. No.	Part No.	Description		
	CAPACITORS			
C1	1-108-579-00	MYLAR	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MYLAR	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MYLAR	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MYLAR	0.01μF	50V
	DIODE			
D1	8-719-812-31	DIODE RL040		
D2	8-719-812-31	DIODE RL040		
D3	8-719-812-31	DIODE RL040		
D4	8-719-812-31	DIODE RL040		
D5	8-719-812-31	DIODE RL040		
D6	8-719-812-33	DIODE GL040		
D7	8-719-812-31	DIODE RL040		
D8	8-719-812-31	DIODE RL040		
D9	8-719-812-31	DIODE RL040		
D10	8-719-812-31	DIODE RL040		
D11	8-719-812-31	DIODE RL040		
D12	8-719-812-31	DIODE RL040		
D13	8-719-812-33	DIODE GL040		

Ref. No.	Part No.	Description		
	IC			
IC1	8-759-240-28	IC TC4028BP		
IC2	8-759-120-03	IC μPA2003A		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003A		
	RESISTORS			
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2-2. PERIODIC CHECK AND MAINTENANCE

In order to give full play to set performance and function, perform the following maintenance and period checks of the equipment and tape. In addition, regardless of the length of use, service the set as follows after repairing.

2-2-1. Cleaning of Rotary Drum Assembly

1) Lightly press a chamois cloth (Ref. No. J-2) soaked in cleaning fluid (Ref. No. J-1) against the rotary drum assembly and clean by slowing turning the rotary upper drum assembly counterclockwise by hand.
   Note:
   Do not turn the motor by turning the power on or rotate clockwise. Also, the head tip will be damaged if the chamois cloth is moved vertically against it, so make sure to follow the instructions given above for cleaning the drum.

2-2-2. Cleaning of Tape Path (Fig. 2-10.)

1) In EJECT state, clean the tape transport system (TG-1, 2, 3, 4, 5, 6, 7, pinch roller, capstan shaft) with a chamois cloth soaked in cleaning fluid.
   Note:
   Be careful that grease and oil from the linking mechanism do not get on the cloth.

2-2-3. Cleaning of Drive System

1) Clean the drive system (relay belt, reel table surfaces) with a cloth soaked in cleaning fluid.

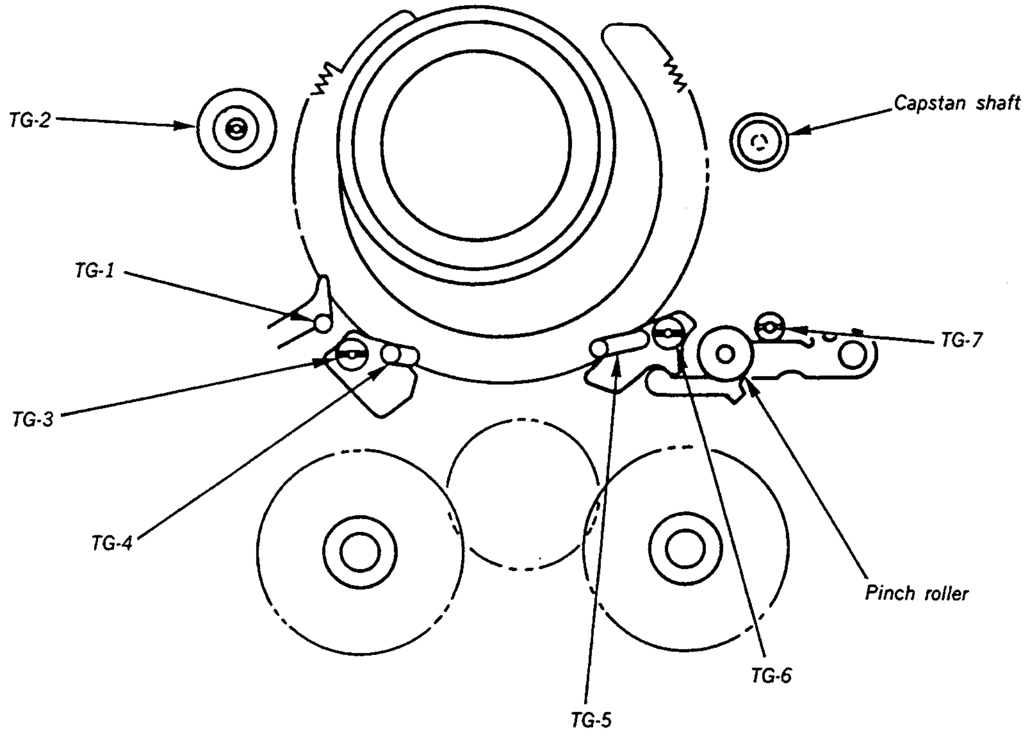


Fig. 2-10.

2-2-4. Periodic Check

Location of maintenance & check		Hours of use (H)										Remarks
		500	1000	1500	200	2500	3000	3500	4000	4500	5000	
	Cleaning of tape	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degausing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Drive system	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-695-637-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be careful not to get oil on the tape path surfaces.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	1-541-508-11
Performance check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD RVS } torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ Cleaning ◎ Oil ☆ Check

Note:

When performing an overhaul, refer to the above items when replacing parts.

Note: Oil

Be sure to use the specified oil. (The wrong viscosity may cause problems)

Oil: Part No. 7-661-018-01

(Mitsubishi Diamond Oil Hydrofluid EP-56)

Make sure that there are no impurities in the oil which is used for lubrication of bearings. (Friction or burning of the bearings may be caused if dirty oil is used.)

One drop of oil is the amount which sticks to the tip of a rod which is 2mm in diameter, as shown in Fig. 2-11.

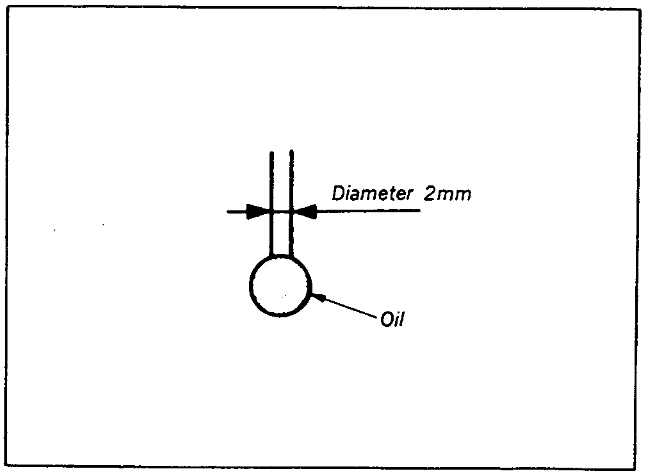


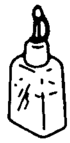
Fig. 2-11.

2-2-5. Service Jigs

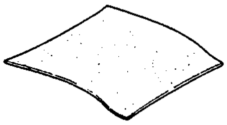
Ref. No.	Name	Part No.	Fixture No.	Use
J-1	Cleaning fluid	Y-2031-001-0	———	
J-2	Chamois cloth	2-034-697-00	———	
J-3	Head degausser	Commercially available	———	
J-4	Small adjustment mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape (WR5-1C)	8-967-995-06		Tape path
J-6	Dial tension gauge	J-6080-827-A		Torque measurements
J-7	Tension measurement reel	J-6080-831-A		with ϕ30 tape
J-8	Tension measurement reel	J-6080-832-A		with ϕ16 string
J-9	FWD, RVS winding torque cassette	J-6080-624-A	GD-2086	
J-10	Rotary drum jig	(packed with repair rotary upper drum)		
J-11	Tape path screwdriver	J-6080-811-A		Tape guide adjustment
J-12	Mode selector II panel	J-6080-844-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector II conversion connector	J-6080-845-A		
J-15	Tape end detection filter	J-6080-848-A		Tape end detection adjustment

Other equipment used: Oscilloscope
Analog tester (20kΩ)

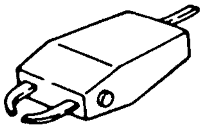
J-1



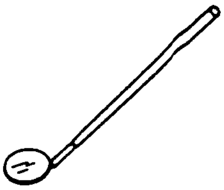
J-2



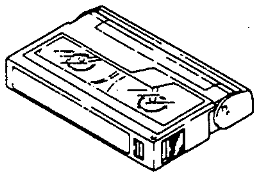
J-3



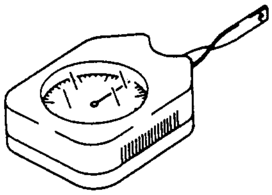
J-4



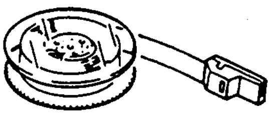
J-5



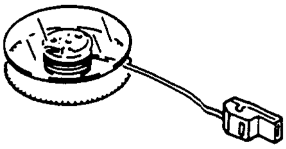
J-6



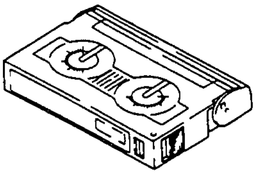
J-7



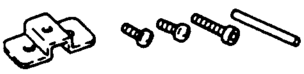
J-8



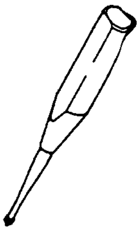
J-9



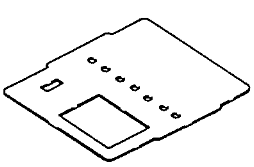
J-10 (Packed with the rotary upper drum for repairs and replacement)



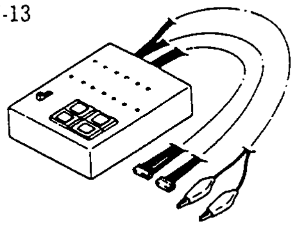
J-11



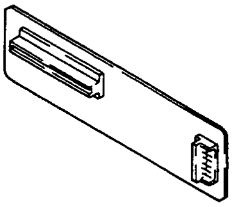
J-12



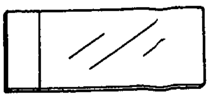
J-13



J-14



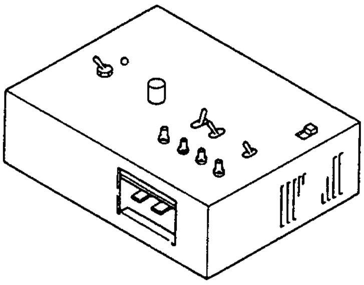
J-15



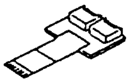
Ref. No.	Name	Part No.	Fixture	Use
J-16∗	Track shift jig	J-6080-891-A	———	Tape path
J-17	Extension cable U	J-6080-901-A	———	Connection cable for track shift and monitor jig
J-18	CTL connection cord	J-6080-891-1	———	
J-19	RF/swp connection cord	J-6080-891-2	———	

∗The track shift & minitor jig (J-6080-851-A) can be used instead of the track shift jig (J-6080-891-A).

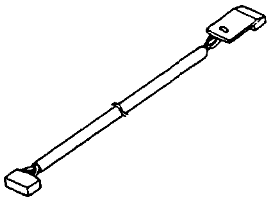
J-16



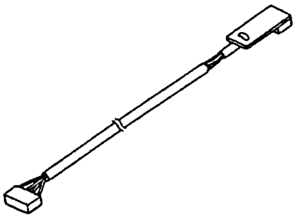
J-17



J-18



J-19



2-3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note 1:

Use mode selector (Ref. No. J-13) when performing these mechanical checks, adjustments and replacements.

Note 2:

The modes indicated by ▭ are those set by pressing the mode selector buttons.

2-3-1. Reel Lock Lever Assembly (Fig. 2-12.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Remove tension coil spring ❶ from notch ❷.
3) Remove stopper washer ❸ and remove reel lock lever assembly ❹ from the shaft ❺.

2. Mounting

1) Mount reel lock lever assembly ❹ on shaft ❺ and secure with stopper washer ❸.
2) Hook tension coil spring ❶ into notch ❷.
3) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

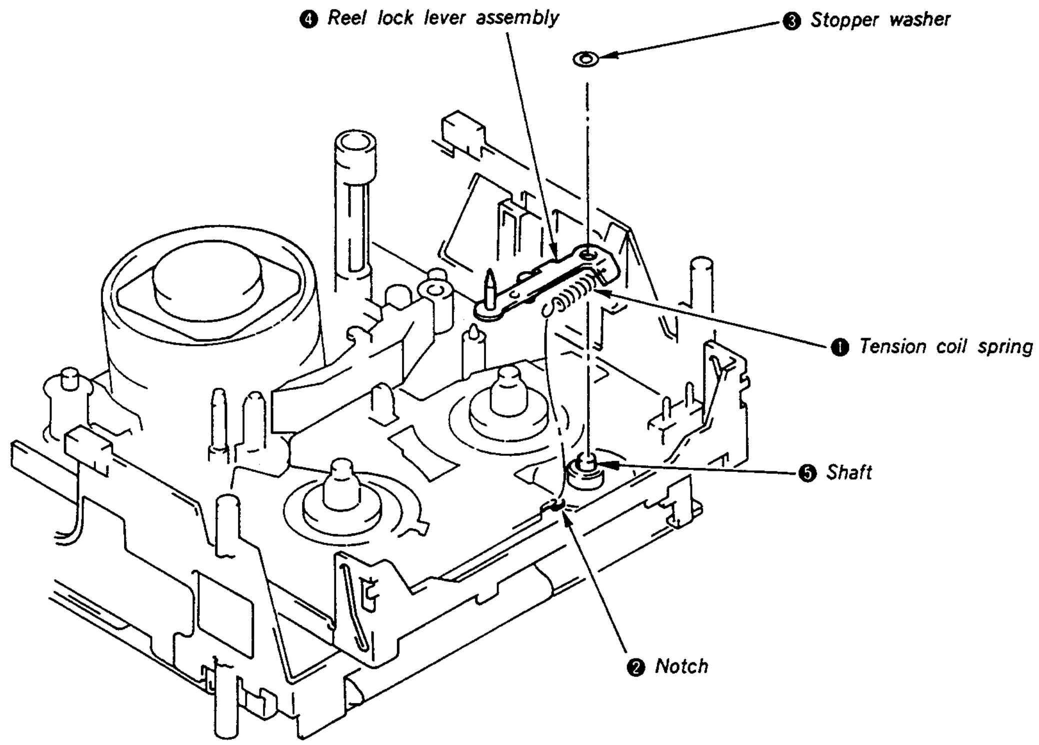


Fig. 2-12.

2-3-2. Pendulume Stopper Plate (Fig. 2-13.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Press LED assembly ❶ tab ❼ in the direction of arrow and lift LED assembly ❶ up to remove. Remove claw ❷.
4) Remove screws ❸ and ❹.
5) Remove pendulum stopper plate ❻ from the two claws ❺.

Note:

When removing and mounting, be careful not to press claw ❼ too hard, or it may break or bend.

2. Mounting

1) Set to $\boxed{\text{READY}}$ mode.
2) Place LED assembly ❶ so that it is on top of pendulum stopper plate ❻ and insert into the two claws ❺ and dowels ❾.
3) Tighten screws ❸ and ❹ in that order.
4) Hook LED assembly ❶ claw ❷ and press in the direction of arrow B .
5) Set to $\boxed{\text{EJECT}}$ mode.
6) Refer to 2-3-1. and mount the reel lock lever assembly.
7) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

Note 1:

When mounting pendulum stopper plate ❻, be careful that the TG-1 band assembly ❽ does not get caught.

Note 2:

The band will be loose except for $\boxed{\text{READY}}$ mode.

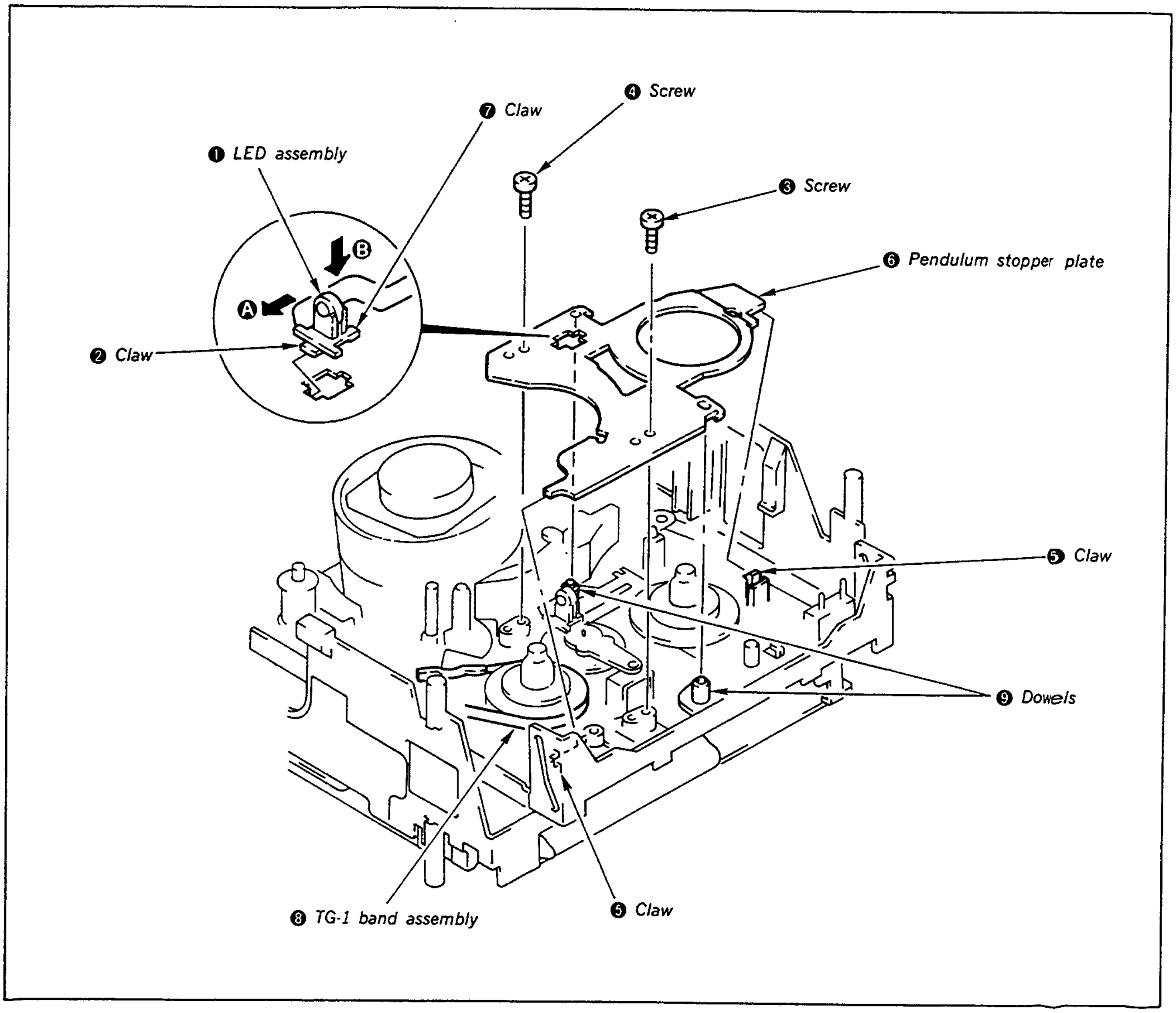


Fig. 2-13.

2-3-3. S Reel Table Assembly (Fig. 2-14.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Remove screw ❶ and remove one side of TG-1 band assembly ❷.
5) Move soft brake ❸ in the direction of arrow Ⓐ.
6) Remove S reel table assembly ❹.

Note:

Hold the portion of the reel claw marked * to remove S reel table assembly ❹. (Do the same when mounting.)

2. Mounting

1) As shown in Fig. A, apply more than ⅓ but less than ½ drop of oil to the section of shaft ❺ indicated by the arrow.
2) Move soft brake ❸ in the direction of arrow Ⓐ.
3) Mount S reel table assembly ❹ on shaft ❺.
4) Mount TG-1 band assembly ❷ with screw ❶.
5) Refer to 2-3-2. and mount the pendulum stopper plate.
6) Refer to 2-3-1. and mount the reel lock lever assembly.
7) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

Note:

Check reel table height by referring to 2-3-26.
Perform tension regulator position adjustment by referring to 2-3-28.
Perform FWD back tension adjustment by referring to 2-3-29.

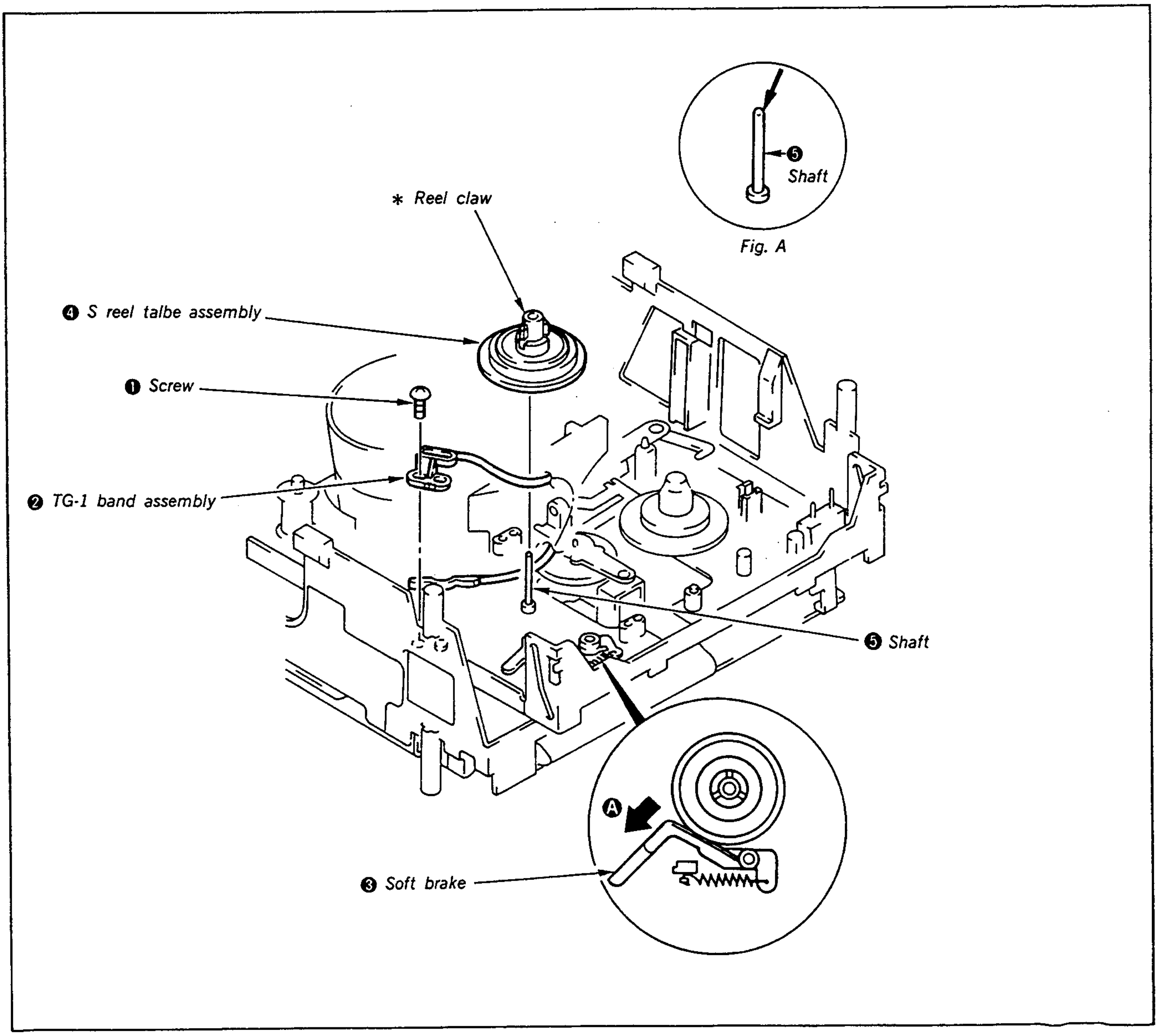


Fig. 2-14.

2-3-4. T Reel Table Assembly (Fig. 2-15.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Remove T reel table assembly ❶.

Note:
Hold the portion of the reel claw marked * to remove T reel table assembly ❶. (Do the same when mounting.)

2. Mounting

1) As shown in Fig. A, apply more than $\frac{1}{3}$ but less than $\frac{1}{2}$ drop of oil to the section of shaft ❷ indicated by the arrow.
2) Mount T reel table assembly ❶ on shaft ❷.
3) Refer to 2-3-2. and mount the pendulum stopper plate.
4) Refer to 2-3-1. and mount the reel lock lever assembly.
5) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

Note:
Check reel table height by referring to 2-3-26.

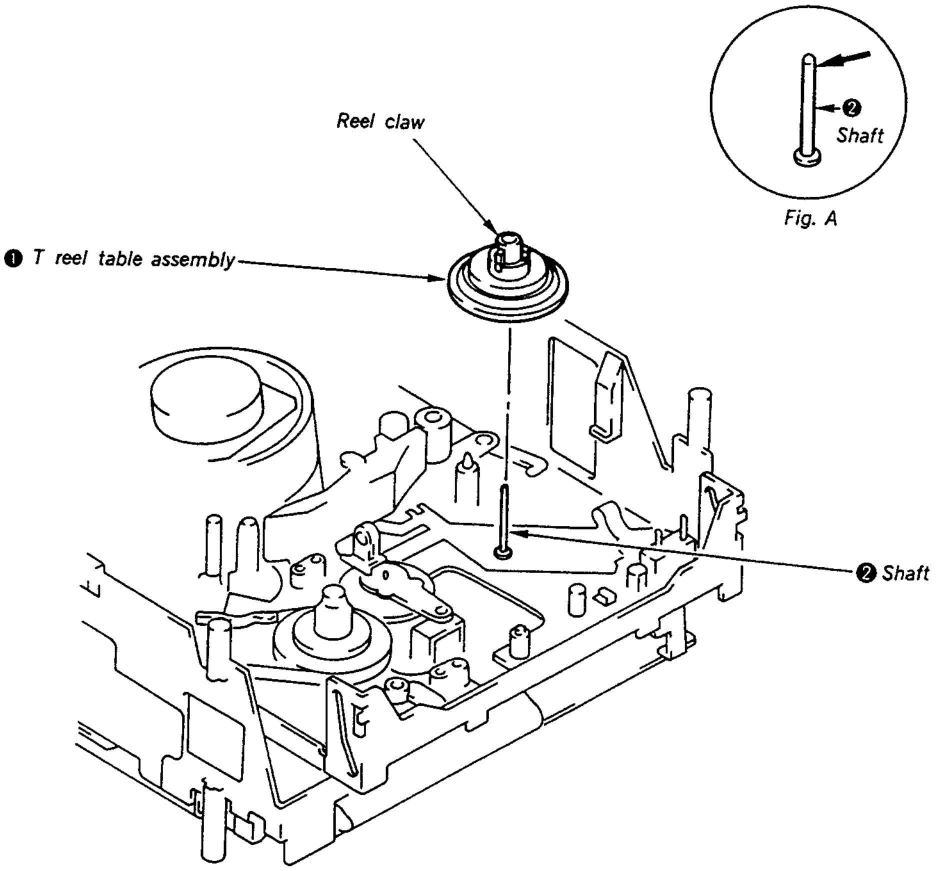


Fig. 2-15.

2-3-5. Pinch Arm B Assembly (Fig. 2-16.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Refer to 2-3-4. and remove the T reel table assembly.
5) Remove tension coil spring ❶ from claw ❷.
6) Remove stopper washer ❸ and pinch arm B assembly ❹.

2. Mounting

1) As shown in Fig. A, apply molten grease to the section of pinch arm B assembly ❹ indicated by the arrow.
2) As shown in Fig. B, apply more than ⅓ but less than ½ drop of oil to the section of shaft ❺ indicated by the arrow.
3) Mount pinch arm B assembly ❹ on shaft ❺ so that the pin goes into hole ❻ and pinch arm A ❼ as illustrated in Fig. C.
4) Mount stopper washer ❸.
5) Hook tension coil spring ❶ on claw ❷.
6) Refer to 2-3-4. and mount the T reel table assembly.
7) Refer to 2-3-2. and mount the pendulum stopper plate.
8) Refer to 2-3-1. and mount the reel lock lever assembly.
9) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

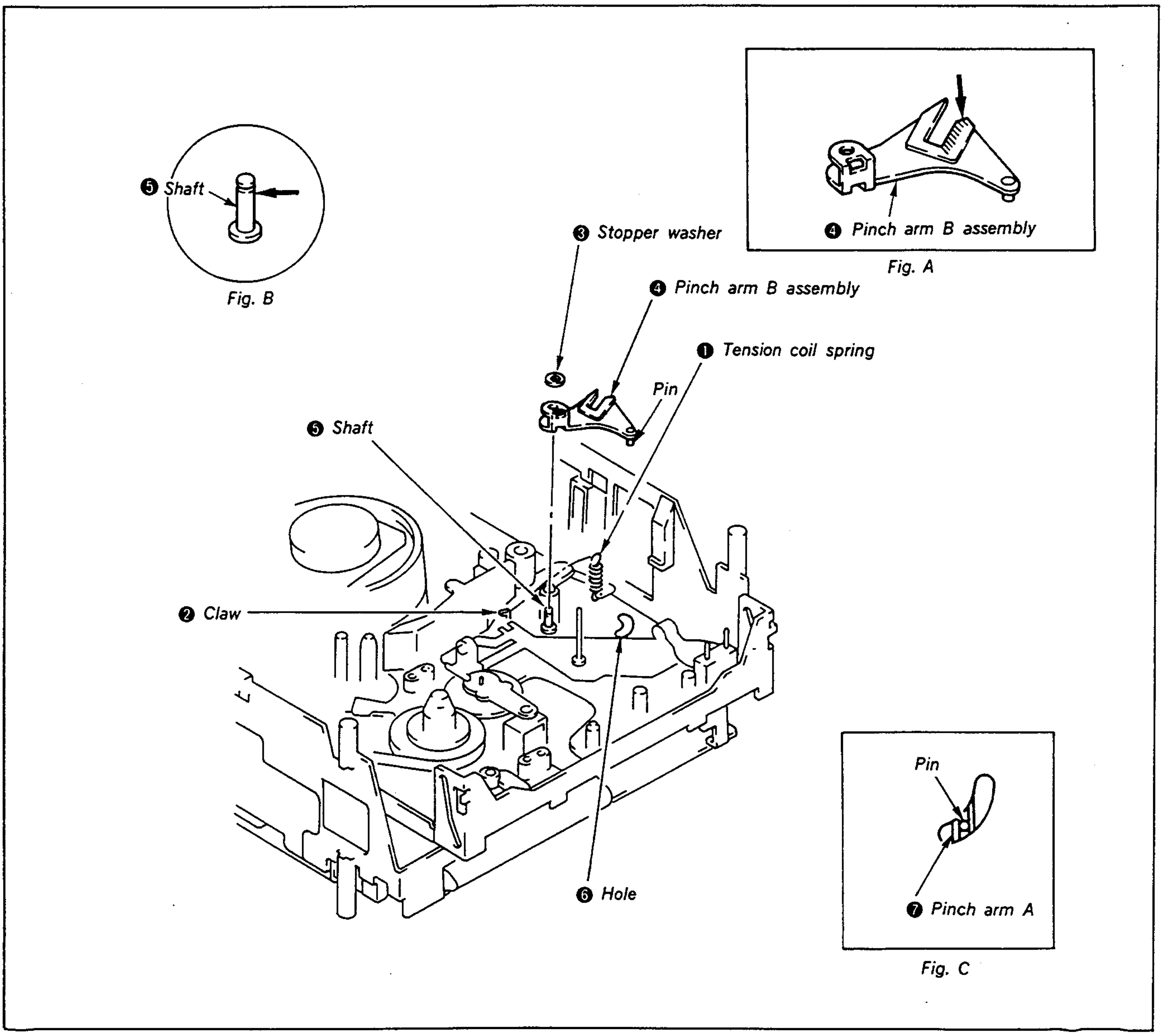

❺ Shaft
❸ Stopper washer
❹ Pinch arm B assembly
❹ Pinch arm B assembly
❶ Tension coil spring
Pin
❺ Shaft
❷ Claw
❻ Hole
Pin
❼ Pinch arm A

Fig. A

Fig. B

Fig. C

Fig. 2-16.

2-3-6. Pinch Arm C Assembly (Fig. 2-17.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Remove tension coil spring ❶ from claw ❷.
5) Remove stopper washer ❸ and pinch arm C assembly ❹ and pinch lever assembly ❺.
6) Remove tension coil spring ❻ and disassembly pinch arm C assembly ❹ and pinch lever assembly ❺.

Note:
Be careful not to touch the roller, marked *.

2. Mounting

1) As shown in Fig. A, apply more than ⅓ but less than ½ drop of oil to the section of shaft ❼ indicated by the arrow.
2) Mount pinch lever assembly ❺ on pinch arm C assembly ❹, being careful not to touch the roller, and hook tension coil spring ❻.
3) Mount pinch arm C assembly ❹ and pinch lever assembly ❺ on shaft ❼.
4) Mount stopper washer ❸.
5) Hook tension coil spring ❶ on claw ❷.
6) Refer to 2-3-2. and mount the pendulum stopper plate.
7) Refer to 2-3-1. and mount the reel lock lever assembly.
8) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

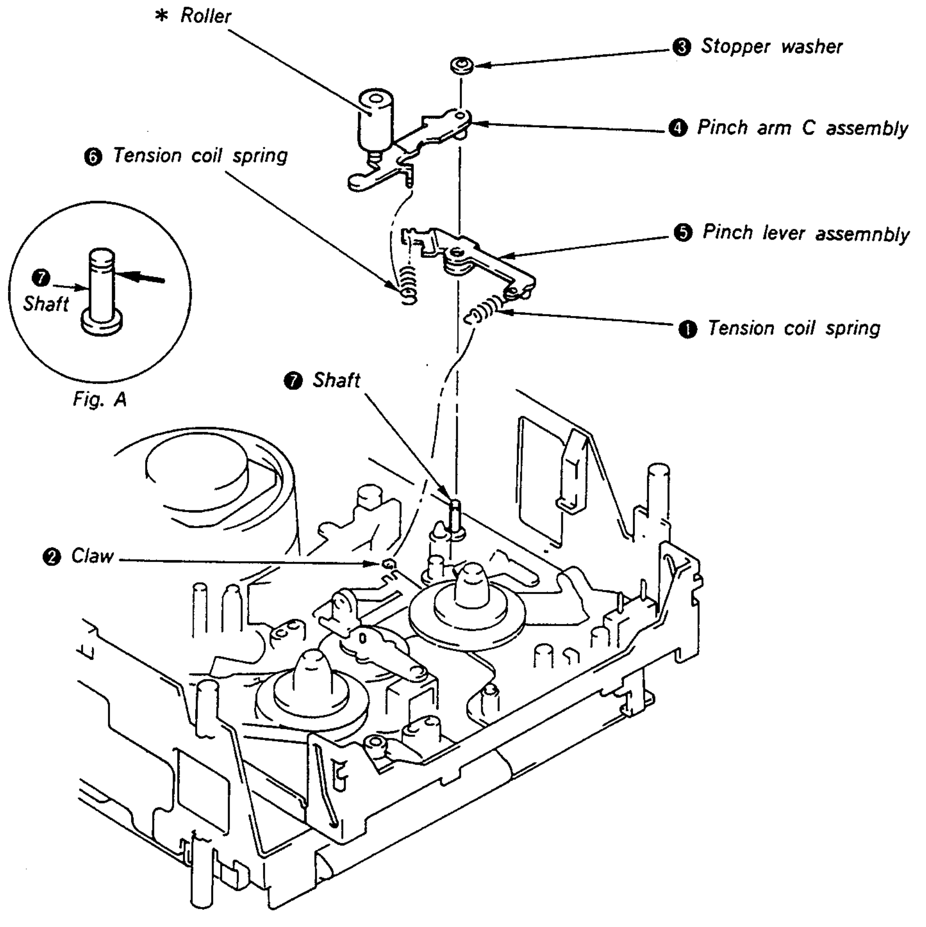

* Roller
❸ Stopper washer
❹ Pinch arm C assembly
❻ Tension coil spring
❺ Pinch lever assemnbly
❼ Shaft
❶ Tension coil spring
Fig. A
❼ Shaft
❷ Claw

Fig. 2-17.

2-3-7. TG-1 Arm Assembly (Fig. 2-18.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Remove stopper washer ❶ and screw ❷.
5) Remove tension coil spring ❸ and TG-1 arm assembly ❹.

Note:

Be careful not to touch the shoe, marked * (Fig. 2-19.) and the guide, also marked *.

2. Mounting

1) As shown in Fig. A, apply more than ⅓ but less than ½ drop of oil to the section of shaft ❺ indicated by the arrow.
2) Mount TG-1 arm assembly ❹ on shaft ❺, being careful not to touch the guide.
3) Wind TG-1 band assembly ❼ around the outer circumference of S reel table assembly ❻ and mount with screw ❷ after lining up to the dowel.
4) Mount stopper washer ❶.
5) Hook tension coil spring ❸ as shown in Fig. B.
6) Refer to 2-3-2. and mount the pendulum stopper plate.
7) Refer to 2-3-1. and mount the reel lock lever assembly.
8) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

Note 1:

Be careful that the TG-1 band assembly ❽ is not bent.

Note 2:

Perform tension regulator position adjustment, referring to 2-3-28.

Note 3:

Perform FWD back tension adjustment, referring to 2-3-29.

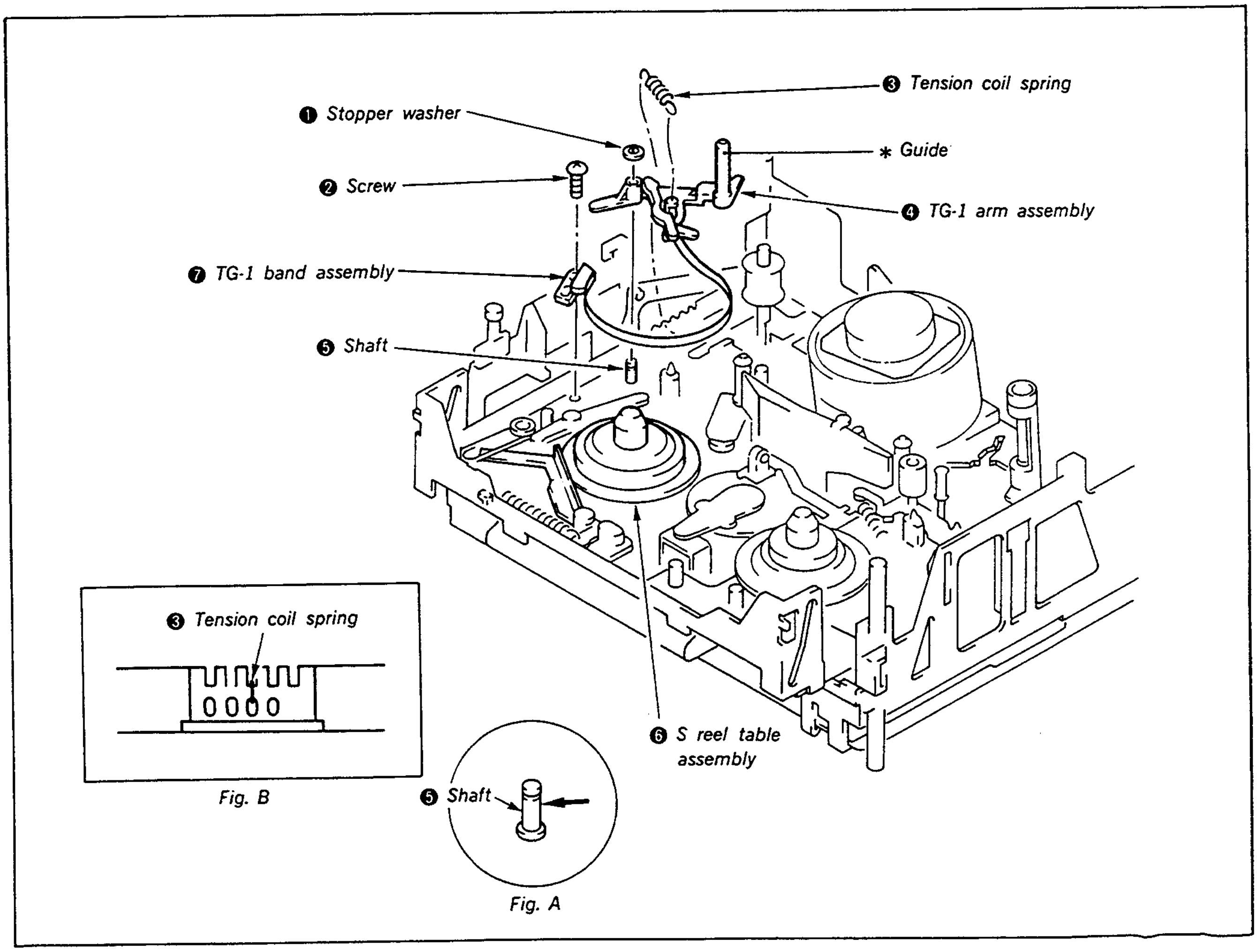

❸ Tension coil spring
❶ Stopper washer
* Guide
❷ Screw
❹ TG-1 arm assembly
❼ TG-1 band assembly
❺ Shaft
❸ Tension coil spring
❻ S reel table assembly
❺ Shaft

Fig. B

Fig. A

Fig. 2-18.

2-3-8. TG-1 Band Assembly (Fig. 2-19.)

1. **Removal**
1) Refer to 2-3-7. and remove the TG- 1 arm assembly ❸.
2) Remove TG-1 band assembly ❶ tab ❷ from TG-1 arm assembly ❸ hole.

2. **Mounting**
1) Insert TG-1 band assembly ❶ claw ❷ in TG-1 arm assembly ❸ hole.
2) Confirm that TG-1 band assembly ❶ rotates smoothly around TG-1 arm assembly ❸ hole.
3) Refer to 2-3-7. and mount TG-1 arm assembly ❸.

Note 1:

Be careful that the TG-1 band assembly ❶ is not bent.

Note 2:

Be careful not to touch the shoe, marked *, and the guide, also marked *.

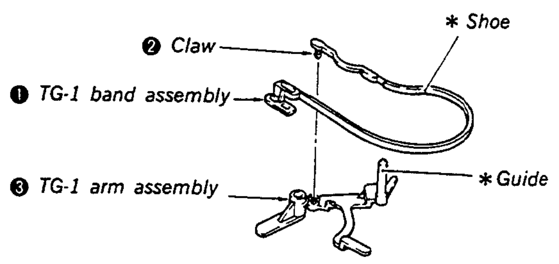


Fig. 2-19.

2-3-9. Soft Brake Assembly (Fig. 2-20.)

1. **Removal**
1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Remove tension coil spring ❶ from claw ❷.
5) Remove soft brake assembly ❸.

2. **Mounting**
1) Mount soft brake assembly ❸. Insert section Ⓐ under LS plate spring ❹.
2) Hook tension coil spring ❶ onto claw ❷.
3) Refer to 2-3-2. and mount the pendulum stopper plate.
4) Refer to 2-3-1. and mount the reel lock lever assembly.
5) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

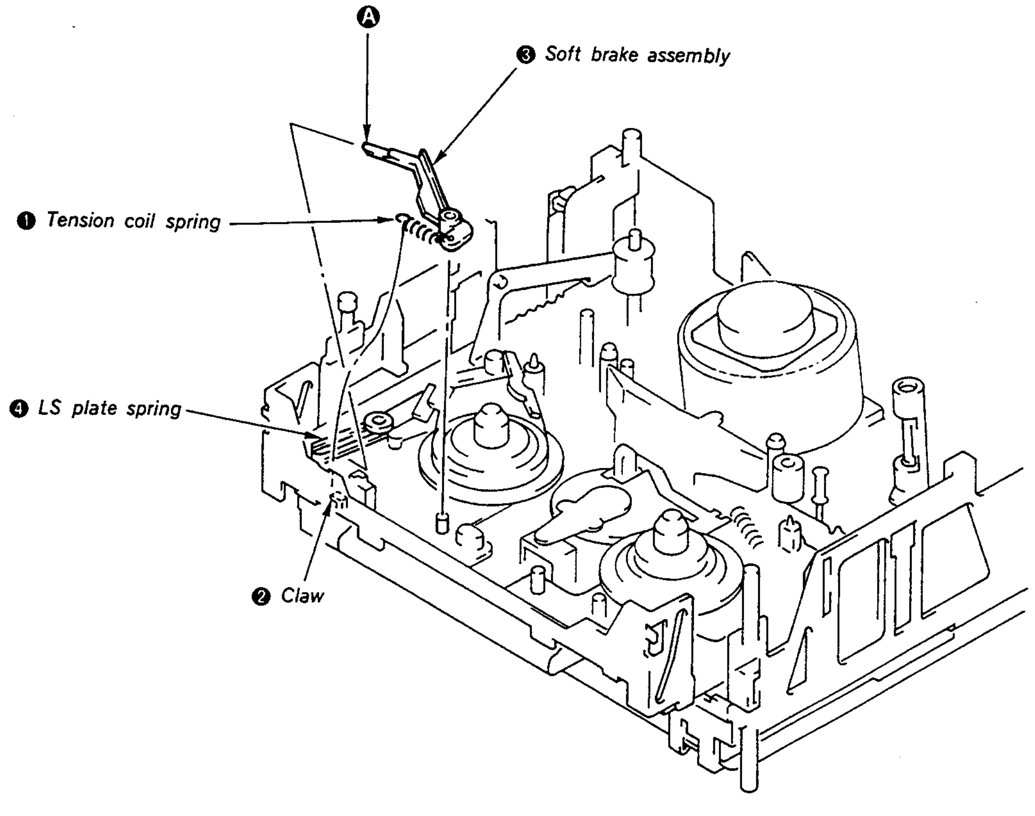


Fig. 2-20.

2-3-10. LS Chassis Assembly (Fig. 2-21.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Put into BLANK after GUIDE LOAD mode.
3) Remove stopper washer ❶.
4) Remove the three screws ❷ and LS guides ❸.
5) Remove LS chassis assembly ❹ in the direction of arrow Ⓐ.
6) Unsolder the 9 locations on FP-53 flexible board ❺ indicated in Fig. A with a soldering iron, and remove FP-53 flexible board ❺, which is stuck onto the mechanical chassis.

2. Mounting

1) Remove the tape on the back of a new FP-53 flexible board ❺ and stick on to the mechanical chassis, lining up to the shaft and pattern.
2) Solder the nine locations on FP-53 flexible board ❺ as shown in Fig. B.
3) Apply grease to the portion of LS chassis assembly ❹ indicated by the arrow, as shown in Fig. C.
4) Move reel lock lever assembly ❻ in the direction of arrowⒺ, and mount LS chassis assembly ❹ by lining up the four mounting holes to the mechanical chassis shafts.
5) Engage the two claws ❼ with the drum base.
6) Move TG-7 arm assembly ❽ in the direction of arrow Ⓕ (move gently with tweezers, etc.) and insert into the mechanical chassis hole.
7) As shown in Fig. D, inser LS gear assembly pin ❿ into the LS cam plate long hole ❾.
8) Insert pinch arm B pin into pinch arm A long hole.
9) Insert TS arm ⓫ into pinch arm A ⓬ U groove.
10) Confirm that reel lock lever assembly ❻ does not ride up on reel lock lever B ⓭.
11) Confirm that TG-1 release arm ⓮ does not ride up on M slider ⓯.
12) Confirm that the pendulum gear arm assembly ⓰ pin can be seen through the pendulum stopper plate ⓱ hole.

    Note:

    Confirm that the mechanical chassis assembly parts are assembled correctly.
13) After confirming correct assembly, mount LS guides ❸ and screw ❷.
14) Mount stopper washer ❶.
15) Use the mode selector and confirm that loading and threading are performed smoothly.
16) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

    Note:

    Perform soldering quickly.

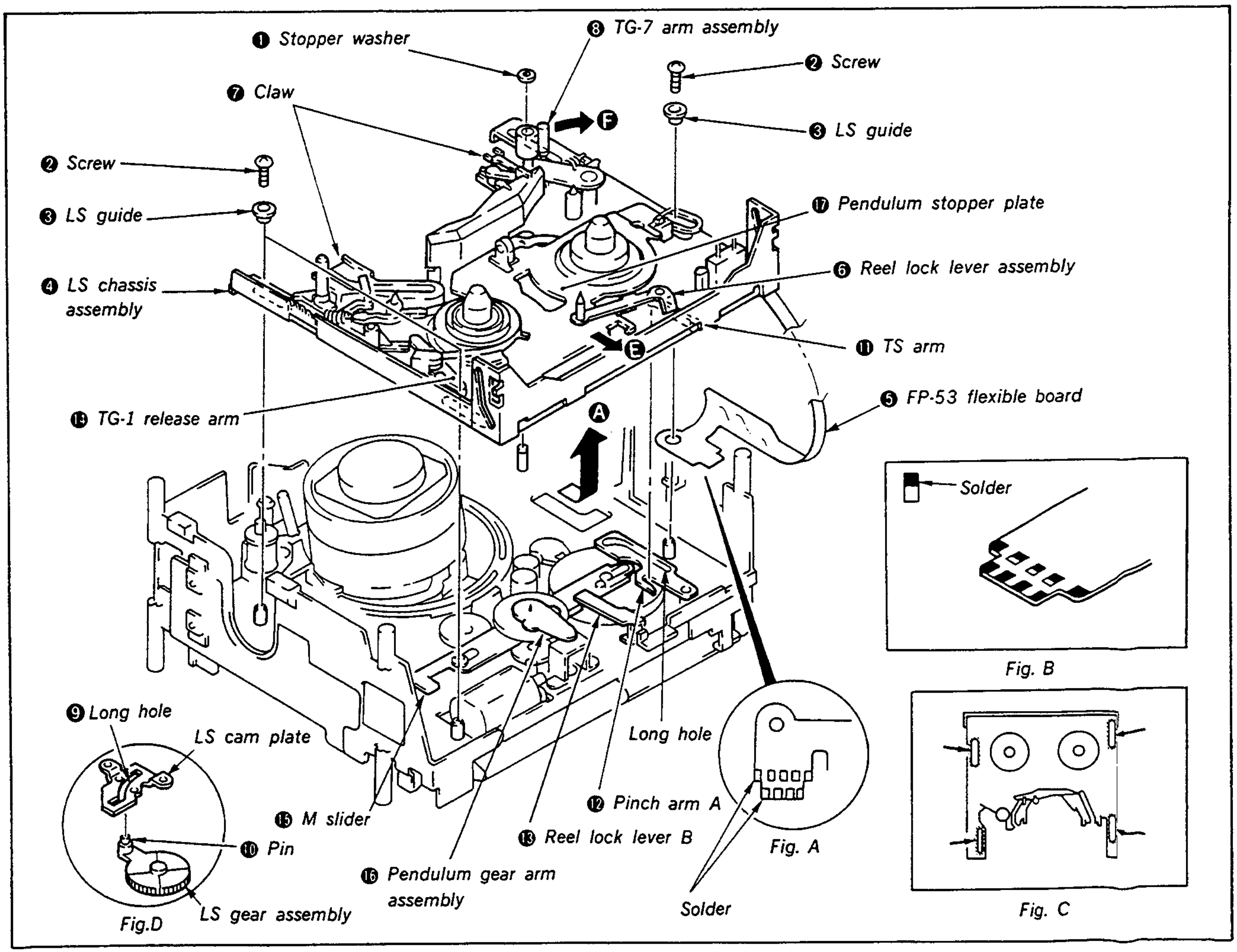

❶ Stopper washer
❽ TG-7 arm assembly
❷ Screw
❼ Claw
Ⓕ
❸ LS guide
❷ Screw
❸ LS guide
⓱ Pendulum stopper plate
❹ LS chassis assembly
❻ Reel lock lever assembly
Ⓔ
⓫ TS arm
❺ FP-53 flexible board
⓮ TG-1 release arm
Ⓐ
Solder
Fig. B
❾ Long hole
LS cam plate
Long hole
⓯ M slider
⓬ Pinch arm A
❿ Pin
⓭ Reel lock lever B
Fig. A
⓰ Pendulum gear arm assembly
Fig.D
LS gear assembly
Solder
Fig. C

Fig. 2-21.

2-3-11. TG-7 Arm Assembly (Fig. 2-22)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Turn the LS chassis assembly over.
4) Remove stopper washer ❶ (t=0.3mm).
5) Remove TG-7 spring ❷ from hook ❸ and remove the TG-7 arm assembly ❹.

Note 1:

Be careful not to bend the FP-53 flexible board which is attached to the chassis.

Note 2:

Be careful not to bend the TG-7 arm.

2. Mounting

1) As shown in Fig. A, apply more than ⅓ but less than ½ drop of oil to the section of the shaft indicated by the arrow.
2) Mount TG-7 arm assembly ❹ via TG-7 spring ❷.
3) Hook TG-7 spring ❷ on claw ❸.
4) Mount stopper washer ❶.
5) Refer to 2-3-10. and mount the LS chassis assembly.
6) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.
7) Perform guide height adjustment, referring to 2-4. Tape Path Adjustment.

Note:

Confirm that stopper washer ❶ is completely in the shaft groove.

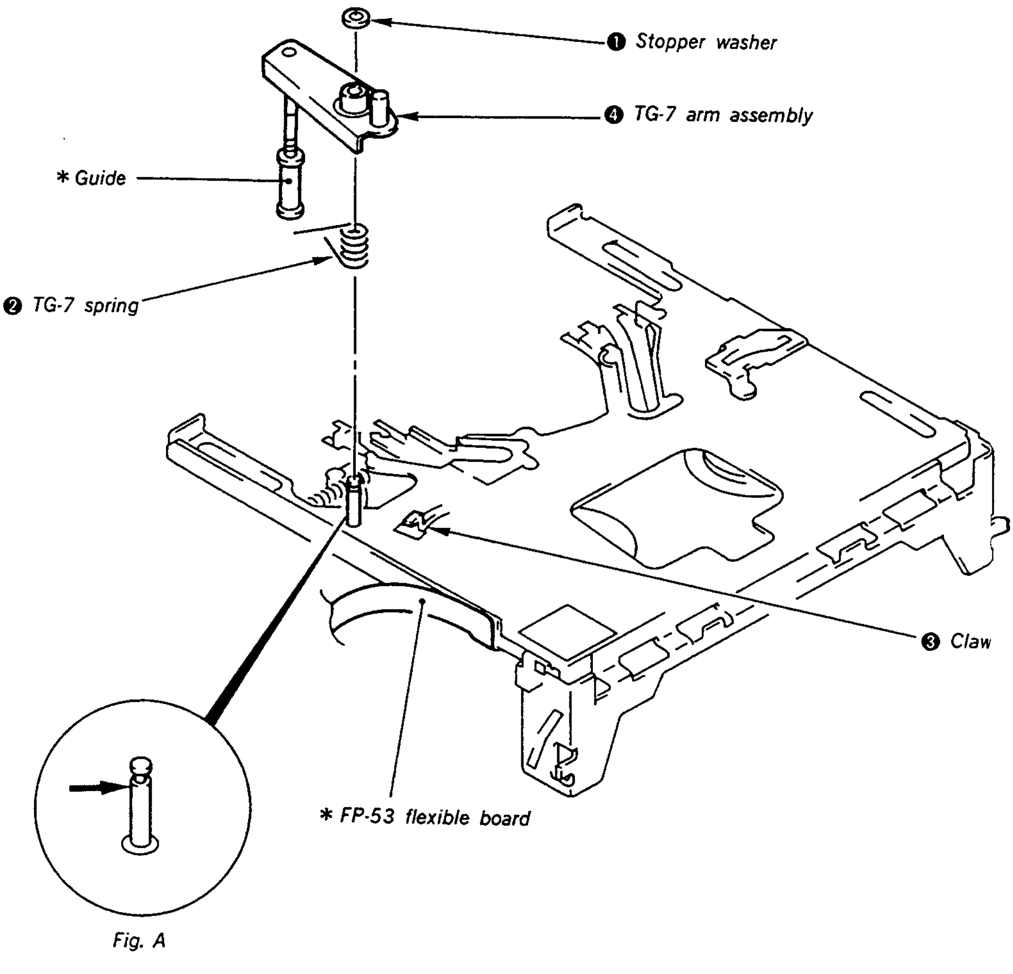


Fig. 2-22.

2-3-12. Pinch Arm A Assembly (Fig. 2-23)

1. **Removal**

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Remove stopper washer ❶.
4) Remove pinch arm A assembly ❷.

2. **Mounting**

1) As shown in Fig. A, apply more than ⅓ but less than ½ drop of oil to the section of the shaft indicated by the arrow.
2) As shown in Fig. B, apply grease to the section of pinch arm A assembly ❷ indicated by the arrow.
3) Insert pinch arm A assembly ❷ pin in the cam assembly ❸ outer groove and mount on the shaft.
4) Mount stopper washer ❶.
5) Refer to 2-3-10. and mount the LS chassis assembly.
6) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.
7) Perform guide height adjustment, referring to 2-4. Tape Path Adjustment.

   Note:

   Confirm that stopper washer ❶ is completely in the shaft groove.

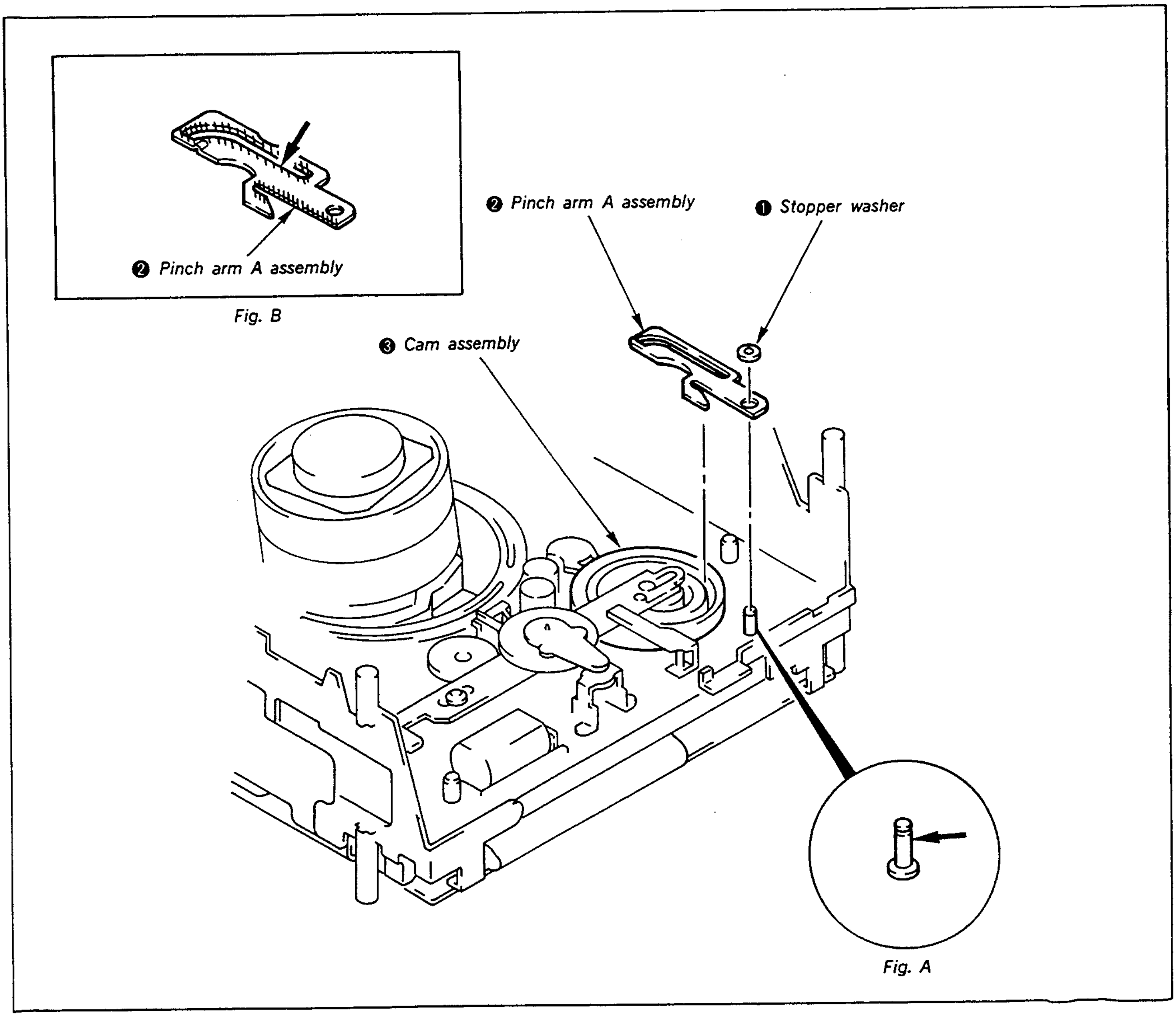


Fig. B

Fig. A

Fig. 2-23.

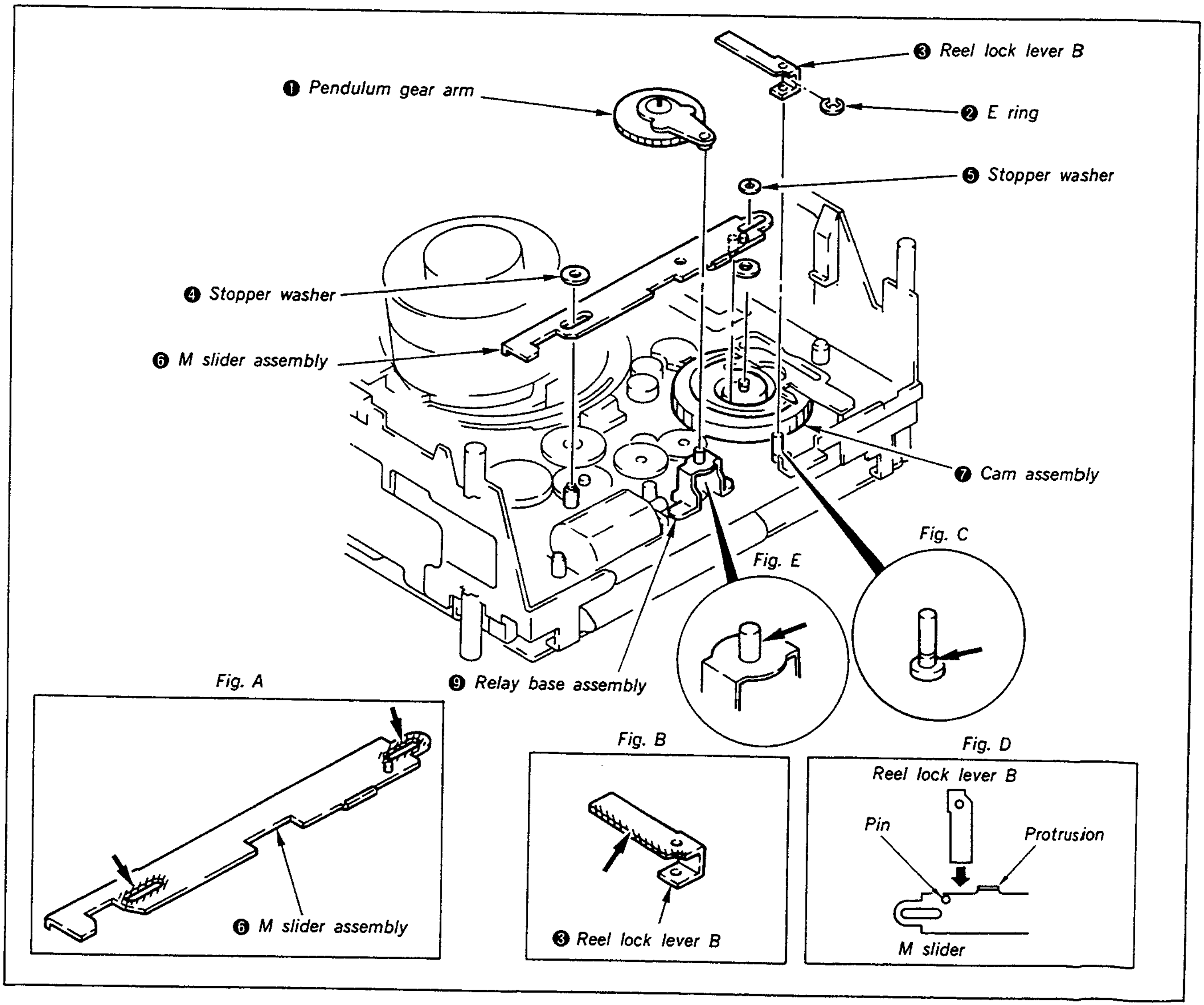
2-3-13. M Slider Assembly (Fig. 2-24)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Remove pendulum gear arm ❶.
4) Remove E ring ❷ and reel lock lever B ❸.
5) Remove stopper washer ❹.
6) Remove stopper washer ❺ and M slider assembly ❻.

2. Mounting

1) As shown in Fig. A, apply grease to the section of M slider assembly ❻ indicated by the arrow.
2) Insert M slider assembly ❻ pin into cam assembly ❼ inner groove and mount.
3) Mount stopper washers ❺ and ❹.
4) As shown in Fig. B, apply grease to the portion of reel lock lever B ❸ indicated by the arrow.
5) As shown in Fig. C and E, apply more than ⅓ drop but less than ½ drop of oil to the portions of the shafts indicated by the arrows.
6) As shown in Fig. D, mount reel lock lever B so that it is between the protrusion and the pin.
7) Mount E ring ❷.
8) Apply more than ⅓ but less than ½ drop of oil to the relay base assembly ❾ shaft outer circumference.
9) Mount pendulum gear arm ❶.
10) Refer to 2-3-10. and mount the LS chassis assembly.
11) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.



❸ Reel lock lever B
❶ Pendulum gear arm
❷ E ring
❺ Stopper washer
❹ Stopper washer
❻ M slider assembly
❼ Cam assembly
Fig. C
Fig. E
Fig. A
❾ Relay base assembly
❻ M slider assembly
Fig. B
❸ Reel lock lever B
Fig. D
Reel lock lever B
Pin
Protrusion
M slider

Fig. 2-24.

2-3-14. TG-4 Base Assembly, TG-5 Base Assembly

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Set for GUIDE LOAD mode and remove TG-4 base assembly ❶ and TG-5 base assembly ❷ from the drum base groove.
4) Rotate the top of pin ❺ in the direction of arrow Ⓐ around TG-4 base assembly ❶ pin ❹ and remove from the notch ❸. (Fig. 2-25.)
5) Remove pin ❹ from notch ❸ hole.
6) Move TG-5 base assembly ❷ in the direction of arrow Ⓐ and remove from notch ❼. (Fig. 2-26.)
7) Remove TG-5 base assembly ❷ from pin ❻ (Fig. 2-27.)

Note:
Be careful not to touch the guide, marked *.

2. Mounting

1) Insert pin ❻ into TG-5 base assembly ❷ hole.
2) Move TG-5 base assembly ❷ in the direction of arrow Ⓑ and insert under notch ❼.
3) Insert TG-4 base assembly ❶ pin ❹ into notch ❸ hole.
4) Rotate TG-4 base assembly ❶ pin ❺ in the direction of arrow Ⓑ and insert into notch ❸.
5) Confirm that TG-4 base assembly ❶ and TG-5 base assembly ❷ are mounted as shown in Fig. A and B respectively.
6) While slowly setting to BLANK after GUIDE LOAD mode, insert TG-4 base assembly ❶ and TG-5 base assembly ❷ into the drum base groove.
If the positioning is wrong, they will catch on the drum base groove entrance and stop moving, so be sure to insert carefully into the drum base groove.
7) Refer to 2-3-10. and mount the LS chassis assembly.
8) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

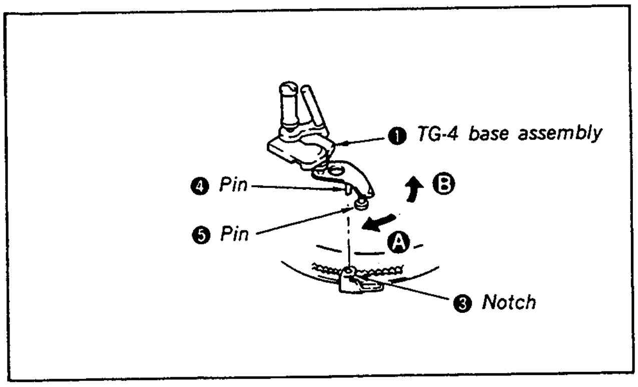


Fig. 2-25.

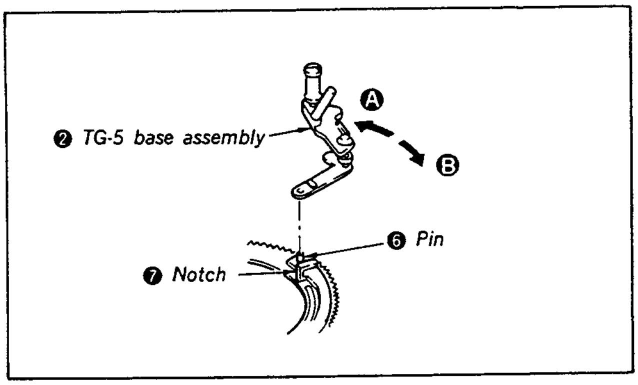


Fig. 2-26.

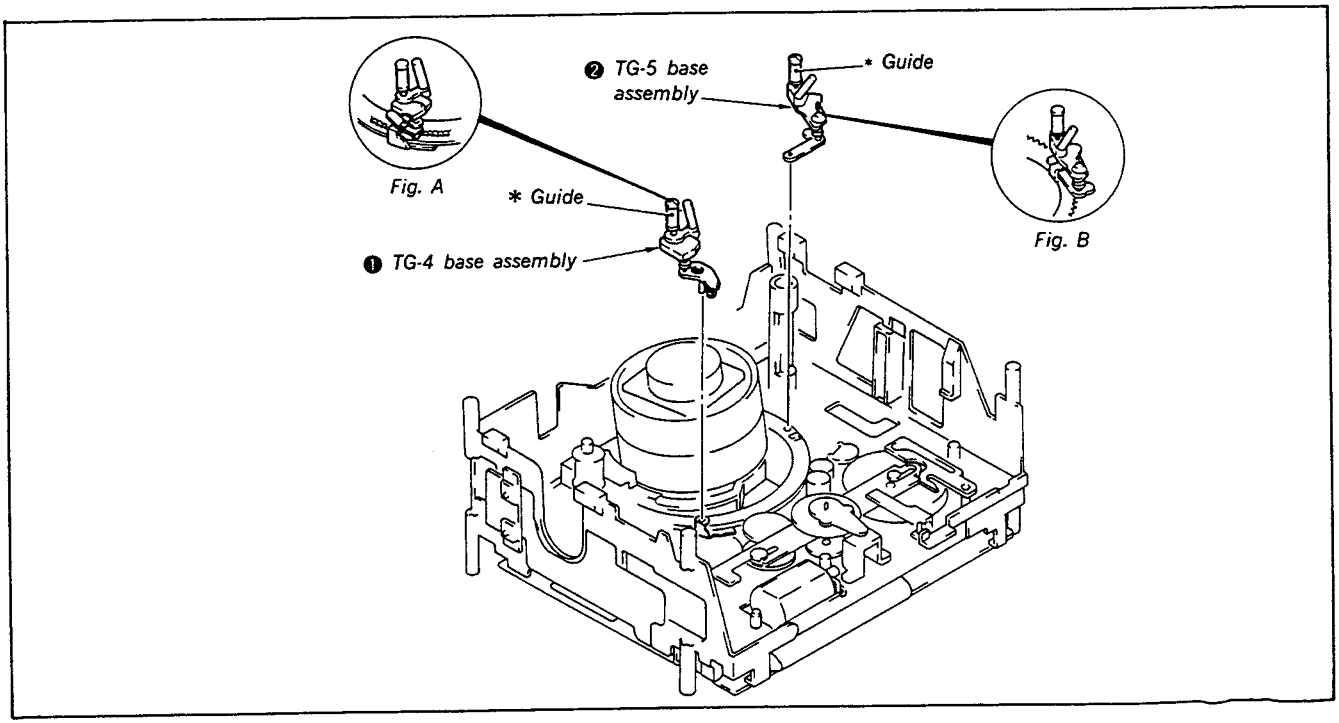


Fig. 2-27.

2-3-15. Loading Slider T Assembly (Fig. 2-28.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Refer to 2-3-14. and remove the TG-4 base assembly and TG-5 base assembly.
4) Refer to 2-3-24. and remove the drum unit.
5) Remove screw ❶, plate spring T ❷ and T slider stopper ❸.
6) Remove screw ❹ and slider support ❺.
7) Remove the two stopper washers ❻ and loading slider T assembly ❼.

2. Mounting

1) As shown in Fig. A, apply grease to the portion of plate spring ❷ indicated by the arrow.
2) As shown in Fig. B, apply grease to the portion of loading slider T assembly ❼ indicated by the arrow.
3) Line up loading slider T assembly hole ❽ and loading slider S assembly hole ❾ and mount loading slider T assembly ❼.
4) Mount the two stopper washers.
5) Line up slider support ❺ to the dowel and mount with screw ❹.
6) Mount T slider stopper ❸ plate spring T ❷ with screw ❶.
7) Refer to 2-3-24. and mount the drum unit.
8) Refer to 2-3-14. and mount the TG-4 base assembly and TG-5 base assembly.
9) Refer to 2-3-10. and mount the LS chassis assembly.
10) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

Note 1:

Make sure that stopper washer ❷ is completely in the shaft groove.

Note 2:

After mounting loading slider T assembly ❼, perform phase adjustment, referring to 2-3-17.

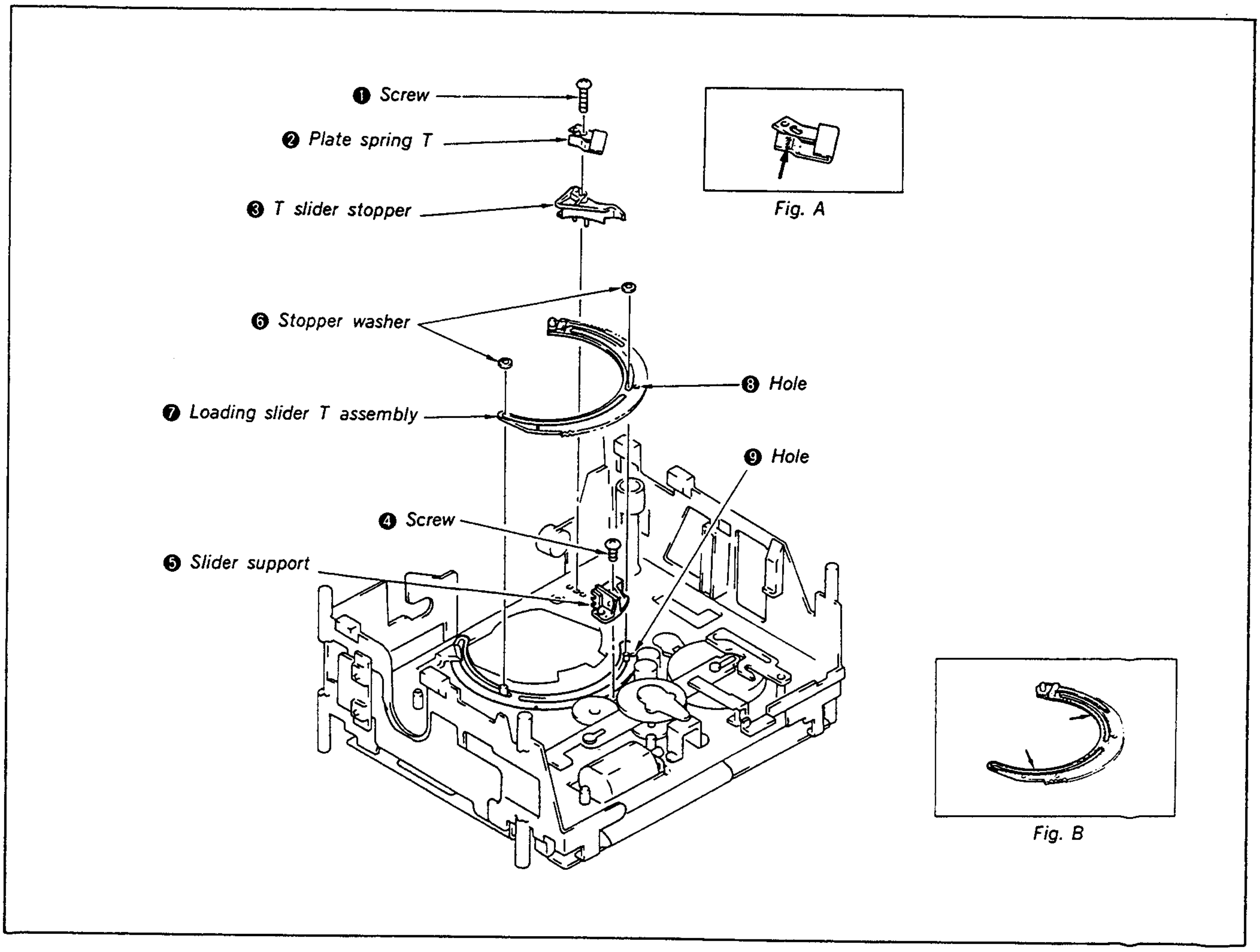


Fig. 2-28.

2-3-16. Loading Slider S Assembly (Fig. 2-29.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Refer to 2-3-14. and remove the TG-4 base assembly and TG-5 base assembly.
4) Refer to 2-3-24. and remove the drum unit.
5) Refer to 2-3-15. and remove the loading slider T assembly.
6) Remove screw ❶ and S slider stopper ❷.
7) Remove the two guide rollers ❸ and loading slider S assembly ❹.

2. Mounting

1) As shown in Fig. A, apply a little grease to the portion of shaft ❺ indicated by the arrows.
2) As shown in Fig. B, apply grease to the portions of loading slider S assembly ❹ indicated by the arrows.
3) Line up loading slider S assembly hole ❻ and chassis hole ❼ and mount loading slider S assembly ❹.
4) Mount the two guide rollers ❸.
5) Line up S slider stopper ❷ to the dowel and mount with screw ❶.
6) Refer to 2-3-15. and mount the loading slider T assembly.
7) Refer to 2-3-24. and mount the drum unit.
8) Refer to 2-3-14. and mount the TG-4 base assembly and TG-5 base assembly
9) Refer to 2-3-10. and mount the LS chassis assembly.
10) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

Note:

After mounting loading slider T assembly, refer to 2-3-17. and perform phase adjustment.

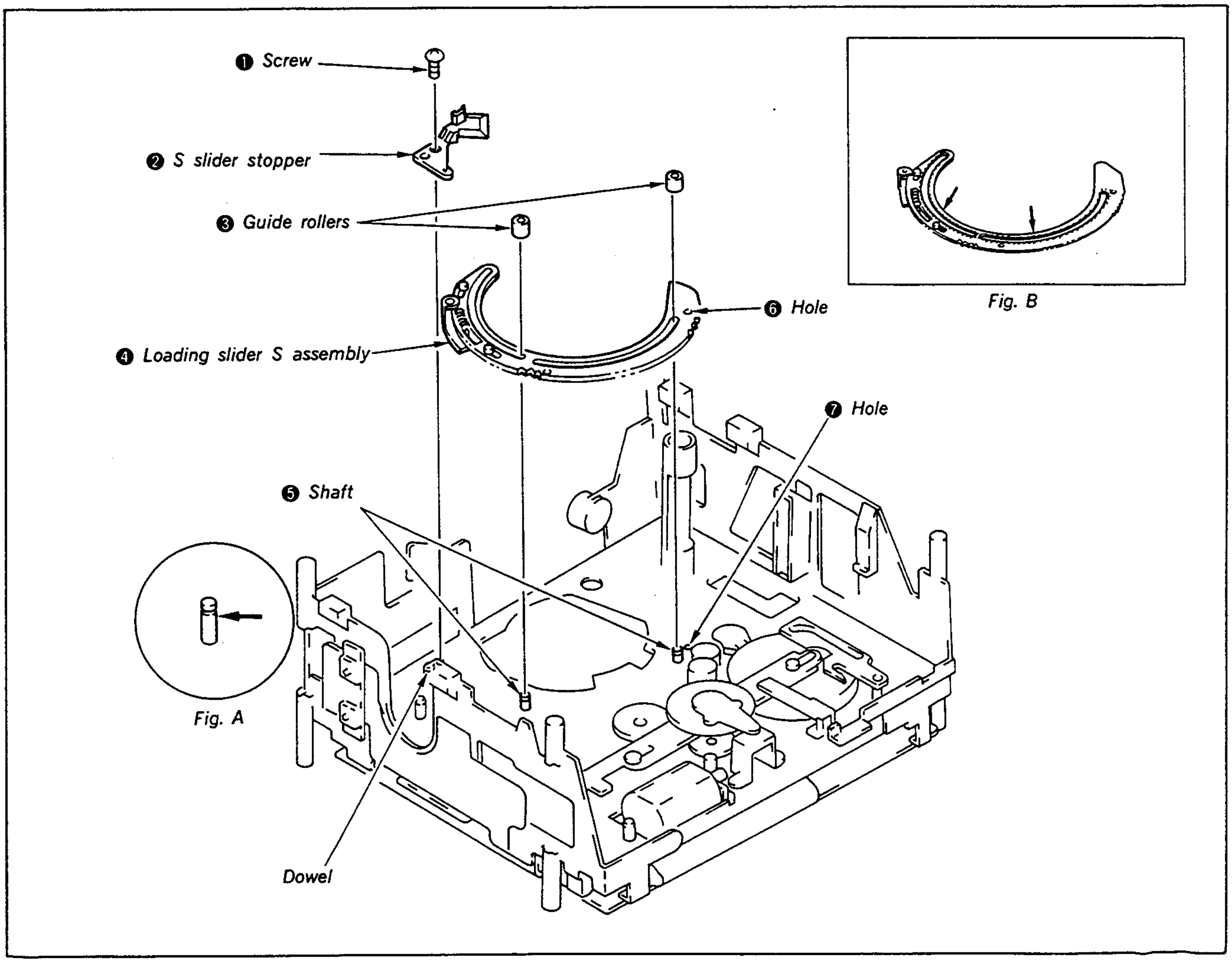


Fig. 2-29.

2-3-17. Phase Adjustment (Fig. 2-30.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Refer to 2-3-14. and remove the TG-4 base assembly and TG-5 base assembly.
4) Refer to 2-3-24. and remove the drum unit.
5) Remove stopper washer ❿ and loading gear S ❻.
6) Remove stopper washer ❽ and LS gear A ❼.

2. Adjustment

1) Confirm that it is in BLANK after GUIDE LOAD mode.
2) Line up the positions of loading slider T assembly ❷ hole, loading slider S assembly ❸ hole and the hole in the mechanical chassis, and insert a rod ❶ with diameter of 1mm.
3) Line up the positions of LS gear C assembly ❹ hole and the hole in the mechanical chassis, and insert a rod ❶ with diameter of 1mm.
4) As shown in Fig. A, rotate loading gear M ❺ so that the notch of loading gear M ❺ comes to the loading gear S ❻ side.
5) As shown in Fig. B, position and mount LS gear A ❼ so that loading slider T assembly ❷ hole and LS gear A ❼ hole are in a straight line.
6) Mount stopper washer ❽.
7) Mount loading gear S ❻ and stopper washer ❿.

Note:
Make sure that stopper washers ❽ and ❿ are completely in the shaft groove.

3. Mounting

1) As shown in Fig. C, apply grease (amount: about the size of a grain of rice) to the 5 locations on cam assembly ❾ inside groove.
2) Refer to 2-3-24. and mount the drum unit.
3) Refer to 2-3-14. and mount the TG-4 base assembly and TG-5 base assembly.
4) Refer to 2-3-10. and mount the LS chassis assembly.
5) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

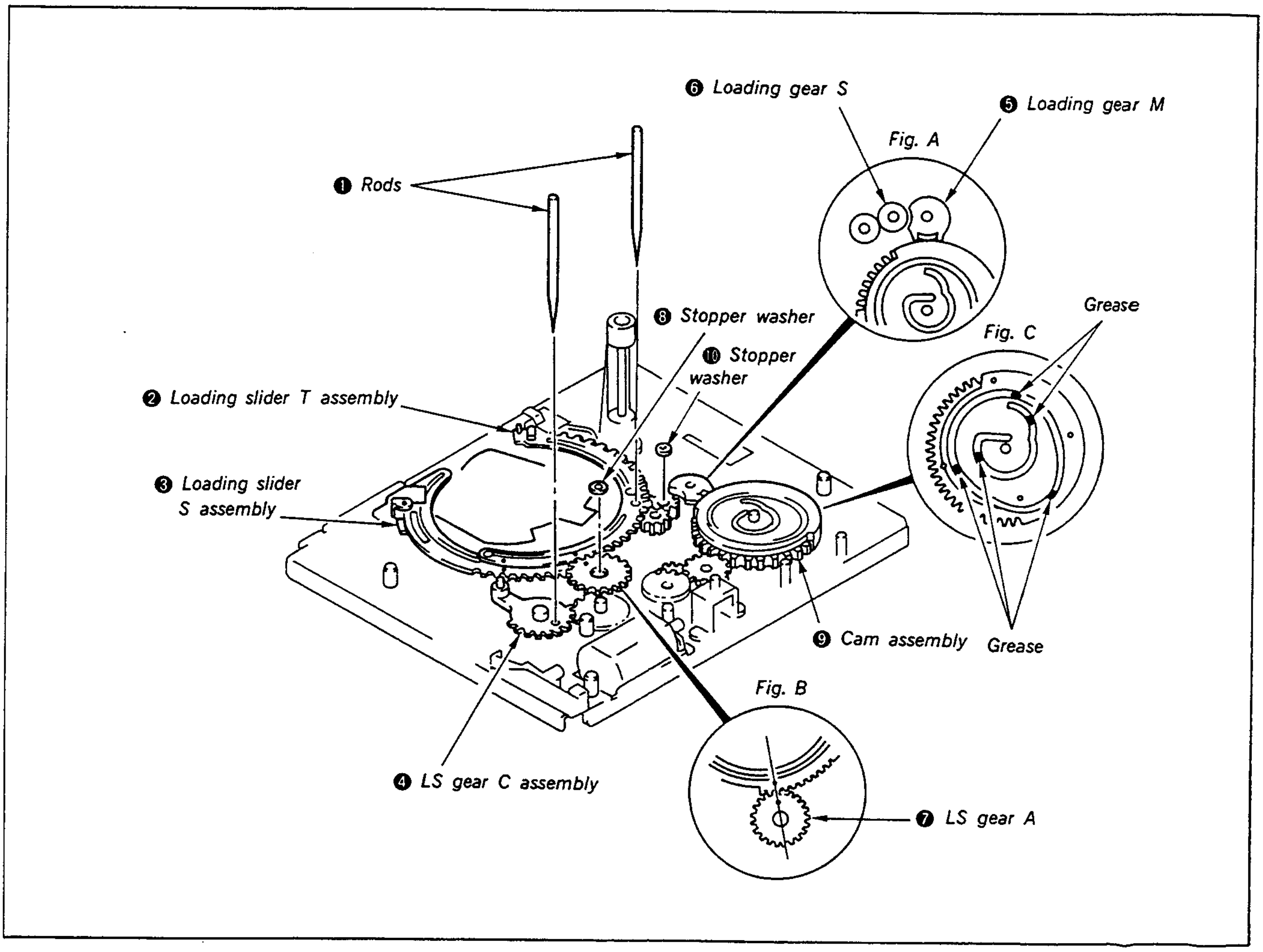

❻ Loading gear S
❺ Loading gear M
Fig. A
❶ Rods
❽ Stopper washer
❿ Stopper washer
Grease
Fig. C
❷ Loading slider T assembly
❸ Loading slider S assembly
❾ Cam assembly
Grease
Fig. B
❹ LS gear C assembly
❼ LS gear A

Fig. 2-30.

2-3-18. Gear Tray In Operation Check (Fig. 2-31.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Refer to 2-3-14. and remove the TG-4 base assembly and TG-5 base assembly.
4) Refer to 2-3-24. and remove the drum unit.
5) Refer to 2-3-21. and remove the LM motor assembly.

2. Check

1) Insert the tip of tweezers into cam assembly ❶ hole.
2) Rotate cam assembly ❶ once in the direction of arrow Ⓐ, then once in the direction of arrow Ⓑ. Repeat this operation three times.
3) At this time, check that the gears and sliders indicated in the figure rotate smoothly and that there is no load.

Note:

Be careful not to scratch the surface of the mechanical chassis when inserting the tweezer tips into the cam assembly ❶ hole.

3. Mounting

1) Refer to Fig. 2-21. and mount the LM motor assembly.
2) Refer to 2-3-24. and mount the drum unit.
3) Refer to 2-3-14. and mount the TG-4 base assembly and TG-5 base assembly.
4) Refer to 2-3-10. and mount the LS chassis assembly.
5) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

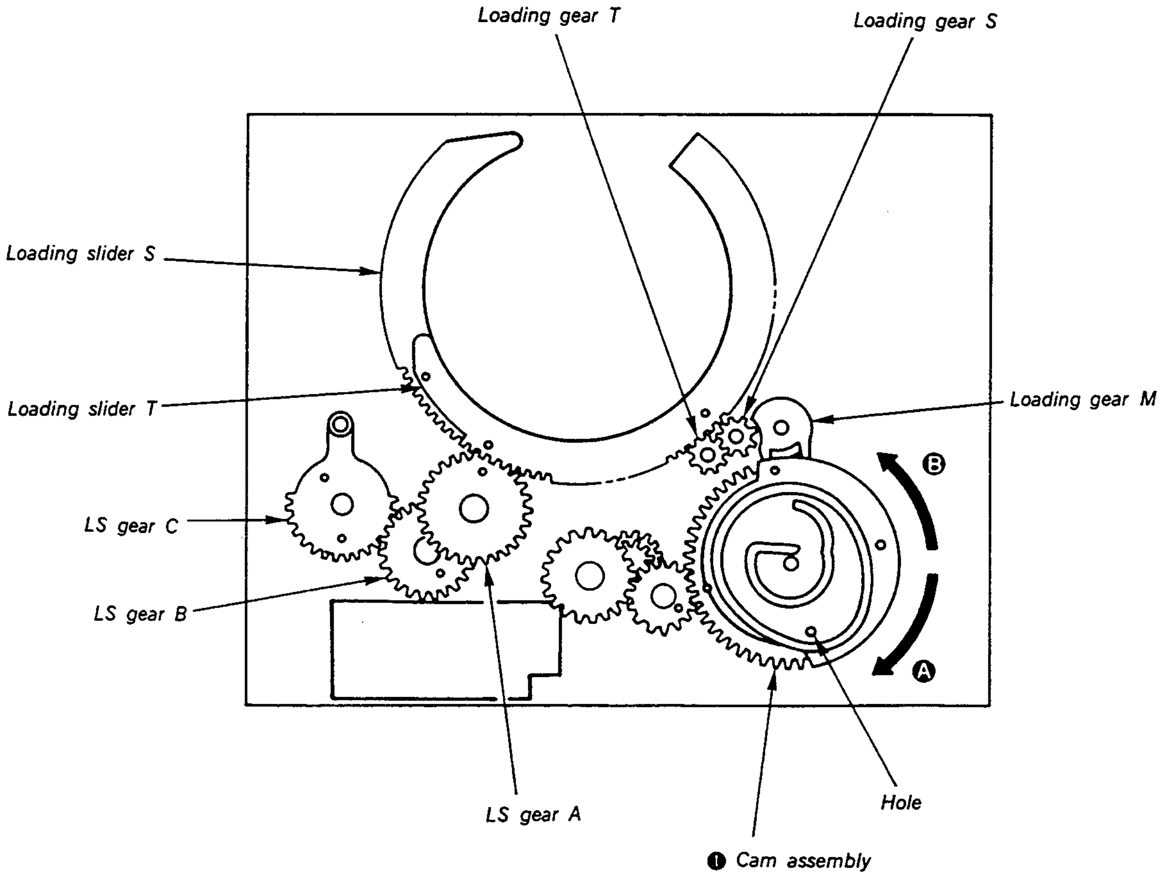

Loading gear T
Loading gear S
Loading slider S
Loading slider T
Loading gear M
Ⓑ
LS gear C
LS gear B
Ⓐ
LS gear A
Hole
❶ Cam assembly

Fig. 2-31.

2-3-19. FP-53 Flexible Board (Fig. 2-32.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly.
3) Refer to 2-3-4. and remove the T reel table assembly.
4) Refer to 2-3-3. and remove the S reel table assembly.
5) Release the two claws ❶, lift up the push switch and peel FP-53 flexible board ❷ off of the LS chassis.

Note:
When peeling off FP-53 flexible board ❷, be careful not to tear it, and also be careful not to pull the LS chassis out of shape.

2. Mounting

1) Clean the portion of the LS chassis assembly where FP-53 flexible board ❷ is to be attached with ethanol.
2) Remove the tape on the back of a new FP-53 flexible board, line up to LS chassis shaft ❸ and claw ❹ and mount.
3) Line up the two dowels ❺, mount on claws ❶, and line up dowel ❻ to FP-53 flexible board ❷ hole and mount.
4) Refer to 2-3-3. and mount the S reel table assembly.
5) Refer to 2-3-4. and mount the T reel table assembly.
6) Refer to 2-3-10. and mount the LS chassis assembly.
7) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

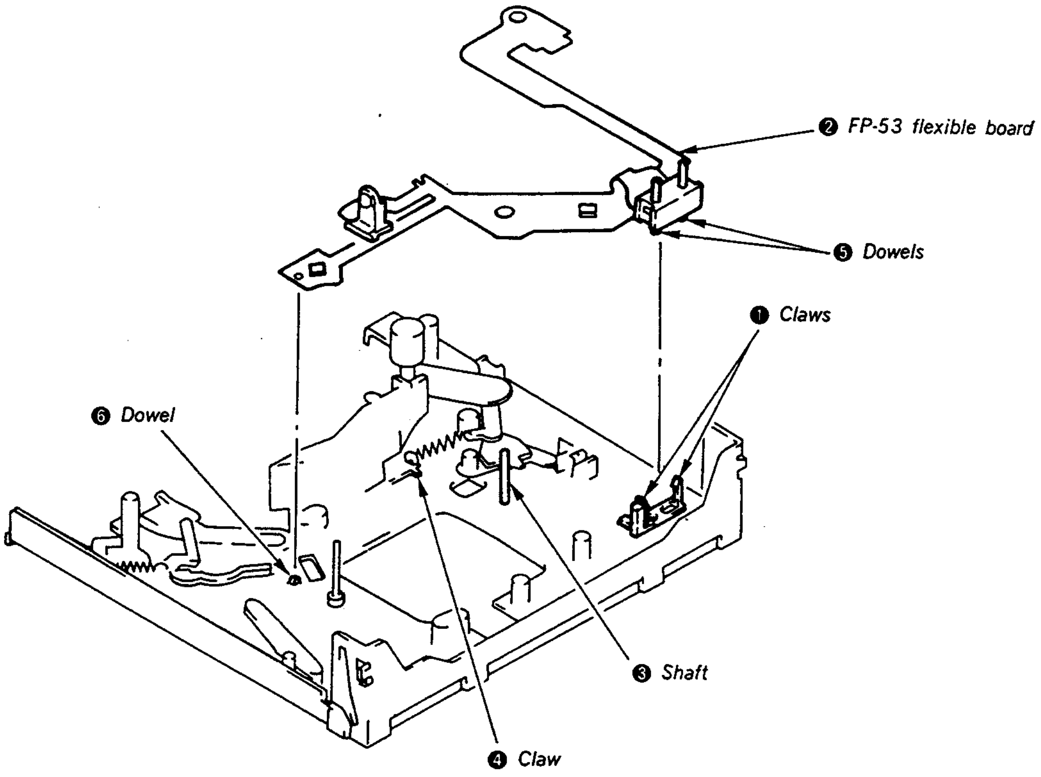


Fig. 2-32.

2-3-20. Cassette Compartment Lock Assembly (Fig. 2-33.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-10. and remove the LS chassis assembly
3) Put into READY mode.
4) Remove screws ❶ and ❷ and remove cassette compartment lock assembly ❸.
5) Remove screw ❹ and CCD SW ❺.

2. Mounting

1) Mount CCD SW ❺ with screw ❹.
2) Line up cassette compartment lock assembly ❸ to dowel ❻ and mount.
3) Tighten screws ❶ and ❷ in that order.
4) Put into BLANK after GUIDE LOAD mode.
5) Refer to 2-3-10. and mount the LS chassis assembly.
6) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

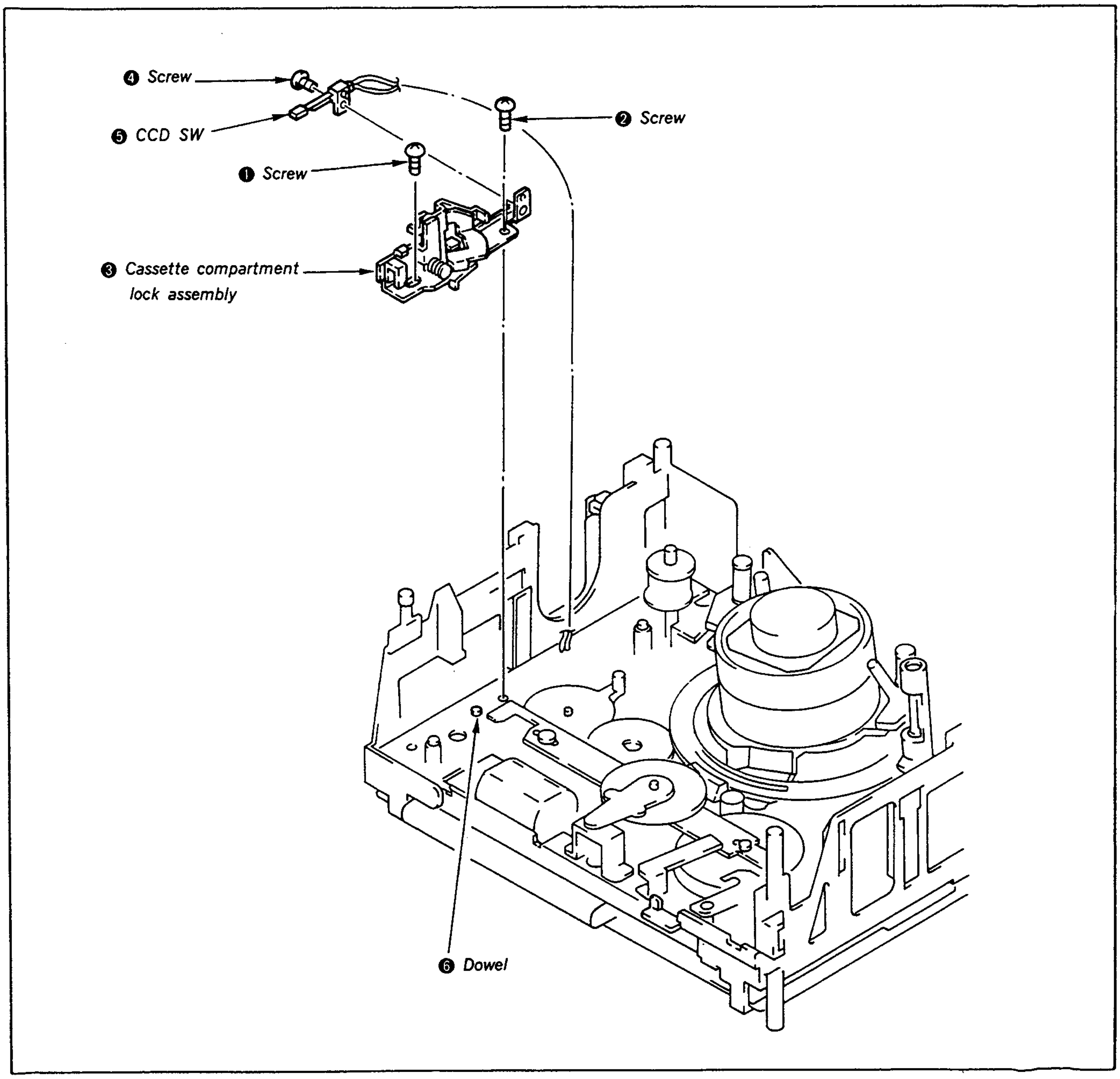

❹ Screw
❺ CCD SW
❷ Screw
❶ Screw
❸ Cassette compartment lock assembly
❻ Dowel

Fig. 2-33.

2-3-21. LM Motor Assembly (Fig. 2-34.)

1. Removal

1) Open the SS-81 board according to the Service Manual, "2. Disassembly 2-8".
2) Remove screws ❶, ❷ and ❸ and remove LM motor assembly ❹ in the direction of arrow Ⓐ.
3) Remove the two screws ❺ and separate motor holder assembly ❻ and DC motor ❼.
4) Remove stopper washer ⓭ from shaft ❽ and remove worm wheel ❿.
5) Unsolder the two cords ⓫ coming out of DC motor ❼ and remove the DC motor from the mechanical chassis.

2. Mounting

1) Solder the two cords on DC motor ❼ in the two locations shown in Fig. A.
2) Apply ⅓ drop of oil to shaft ❽ and mount worm wheel ❿.
3) Apply grease about the size of a grain of rice to worm ❾.
4) Assemble motor holder assembly ❻ and DC motor ❼.
5) Line up mechanical chassis pin ⓬ and motor holder assembly ❻ hole,and mount.
6) Tighten screws ❸, ❷ and ❶ in that order.

Note 1:
Soldering should be done at 260 deg. C, within 5 seconds.

Note 2:
Pull out the cords on DC motor ❼ so that they are not slack on the chassis.

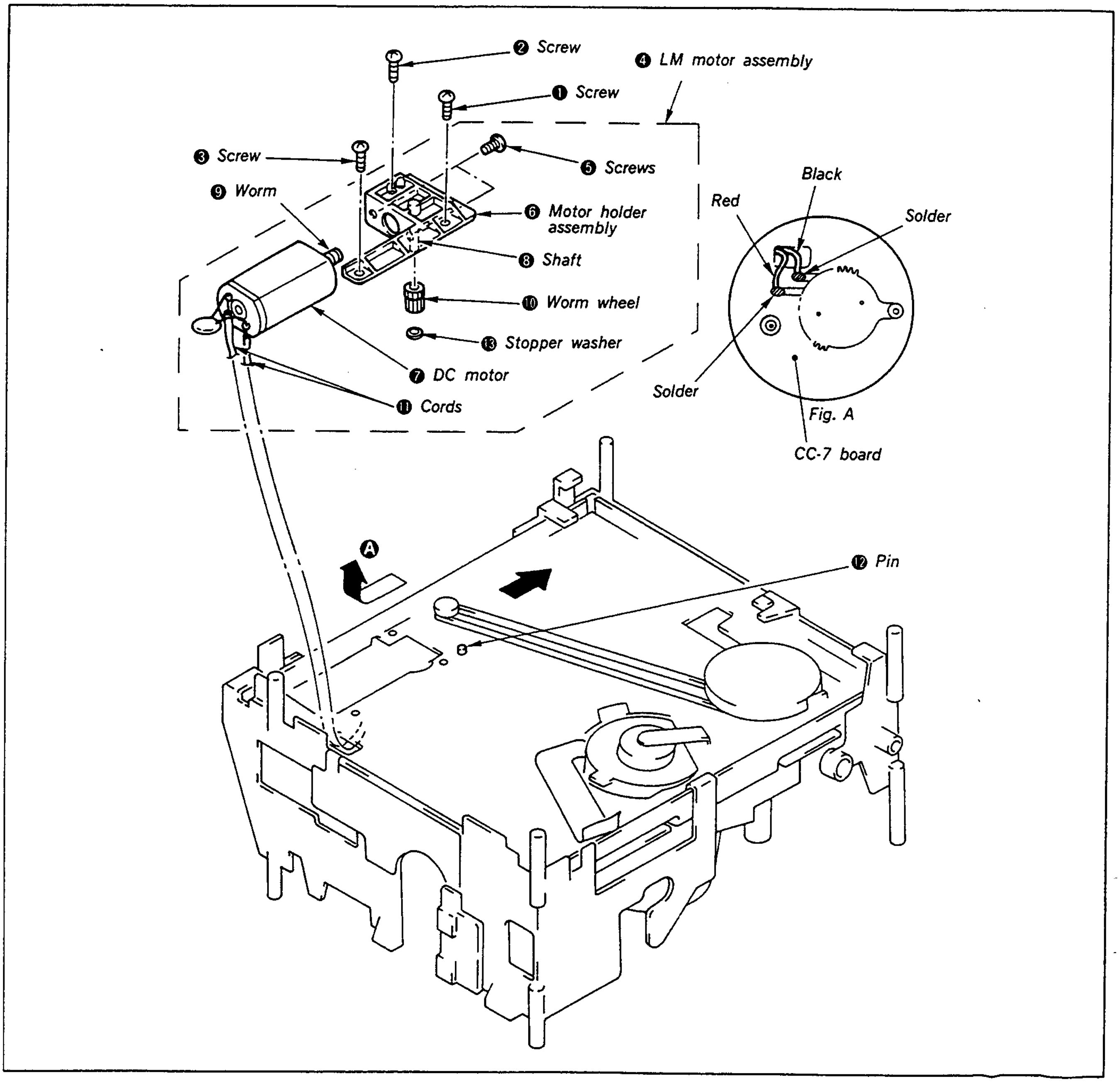

❷ Screw
❹ LM motor assembly
❶ Screw
❸ Screw
❺ Screws
❾ Worm
❻ Motor holder assembly
❽ Shaft
❿ Worm wheel
⓭ Stopper washer
❼ DC motor
⓫ Cords
Black
Red
Solder
Solder
Fig. A
CC-7 board
Ⓐ
⓬ Pin

Fig. 2-34.

2-3-22. Capstan Motor Assembly (Fig. 2-35.)

1. Removal

1) Open the SS-81 board according to the Service Manual, "2. Disassembly 2-8".
2) Remove screws ❶ and ❷ and capstan motor assembly ❺.
3) Remove stopper washer ❻ and conversion gear assembly ❼ and relay belt ❸.

Note:

Be careful not to touch the capstan motor shaft, oil seal and rotor, all marked ∗. When removing, hold the housing, marked ∗. (Do the same when mounting.)

2. Mounting

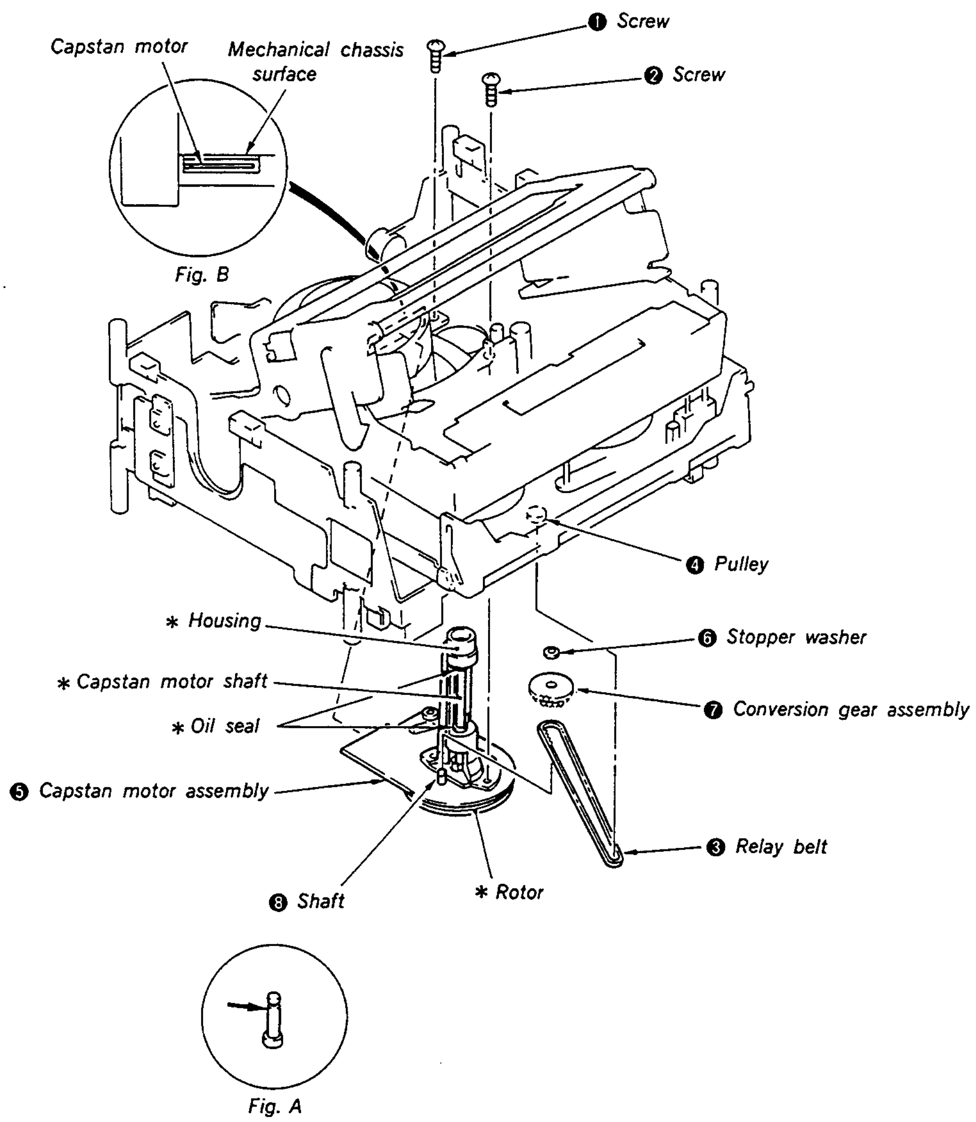
1) As shown in Fig. A, apply more than ⅓ but less than ½ drop of oil to the portion of shaft ❽ indicated by the arrow.
2) Place relay belt ❸ on conversion gear assembly ❼ and mount on shaft ❽.
3) Secure with stopper washer ❻.
4) Place pulley ❹ on relay belt ❸ and mount capstan motor assembly ❺ on the mechanical chassis.
5) As shown in Fig. B, confirm that the capstan motor and mechanical chassis surfaces are horizontal, then tighten screws ❶ and ❷ in that order.

Note 1:

Make sure that stopper washer ❻ is completely in the shaft groove.

Note 2:

Be careful not to stretch relay belt ❸.



❶ Screw
Capstan motor
Mechanical chassis surface
❷ Screw
Fig. B
❹ Pulley
∗ Housing
❻ Stopper washer
∗ Capstan motor shaft
❼ Conversion gear assembly
∗ Oil seal
❺ Capstan motor assembly
❸ Relay belt
❽ Shaft
∗ Rotor
Fig. A

Fig. 2-35.

2-3-23. TG-2 (Fig. 2-36.)

1. Removal

1) Remove TG-2 nut ❶.
2) Remove upper flange bearing ❷, TG-2 flange ❸, TG-2 roller ❹, TG-2 sleeve ❺, TG-2 lower flange❻, upper flange bearing ❼ and pressure coil spring ❽.

Note 1:
When removing TG-2 nut ❶, be careful that other parts are not pushed off by pressure coil spring ❽.

Note 2:
Wear gloves when mounting and removing TG-2 flange ❸ and TG-2 roller ❹.

2. Mounting

1) Mount pressure coil spring ❽, upper flange bearing ❼, TG-2 lower flange ❻, TG-2 sleeve ❺, TG-2 roller ❹, TG-2 flange ❸ and upper flange bearing ❷.
2) Mount TG-2 nut ❶.
3) Pre-set TG-2 height.

3. TG-2 Height Pre-set

1) Push upper flange bearing ❾ down as shown in Fig. A.
2) Screw in TG-2 nut ❶ until the slit is at the same height as TG-2 shaft ❿ upper surface.
3) As shown in Fig. B, rotate TG-2 nut ❶ 180 degrees in the direction of the arrow.

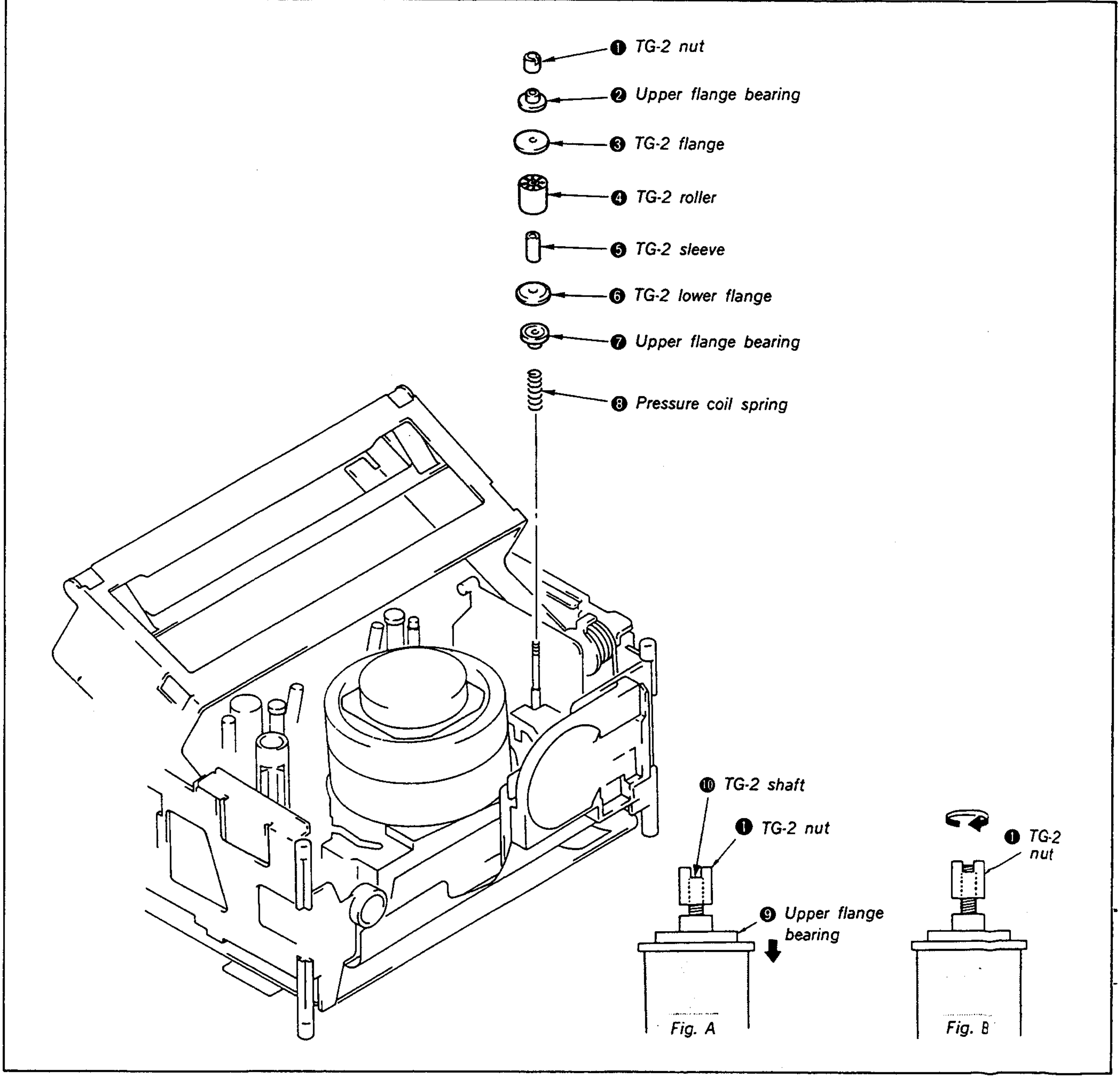

❶ TG-2 nut
❷ Upper flange bearing
❸ TG-2 flange
❹ TG-2 roller
❺ TG-2 sleeve
❻ TG-2 lower flange
❼ Upper flange bearing
❽ Pressure coil spring
❿ TG-2 shaft
❶ TG-2 nut
❾ Upper flange bearing
Fig. A
❶ TG-2 nut
Fig. B

Fig. 2-36.

2-3-24. Drum Unit (Fig. 2-37.)

1. Removal

1) Set to EJECT mode.
2) Refer to the Service Manual, "2. Disassembly 2-8" and open SS-81 board and remove flexible board ❶.
3) Remove the two screws ❷ and screw ❸, and remove drum base ❹ and dew sensor ❺.
4) Remove the three screws ❻ and drum unit ❼.

2. Mounting

1) Mount drum unit ❼ on drum base ❹ and secure with the three screws ❻.
2) Place drum base ❹ on the mechanical chassis and mount with the two screws ❷.
3) Secure dew sensor ❺ and drum base ❹ with screw ❸.
   Note:
   Once screws ❷ and ❸ are loosend, do not use the same screws again.
4) As shown in Fig.A, apply grease to the portion indicated by the arrows.
5) Mount flexible board ❶ on SS-81 board.
6) Refer to the Service Manual, "2. Disassembly 2-8" and mount SS-81 board.
7) Perform 2-4, Tape Path Adjustment.

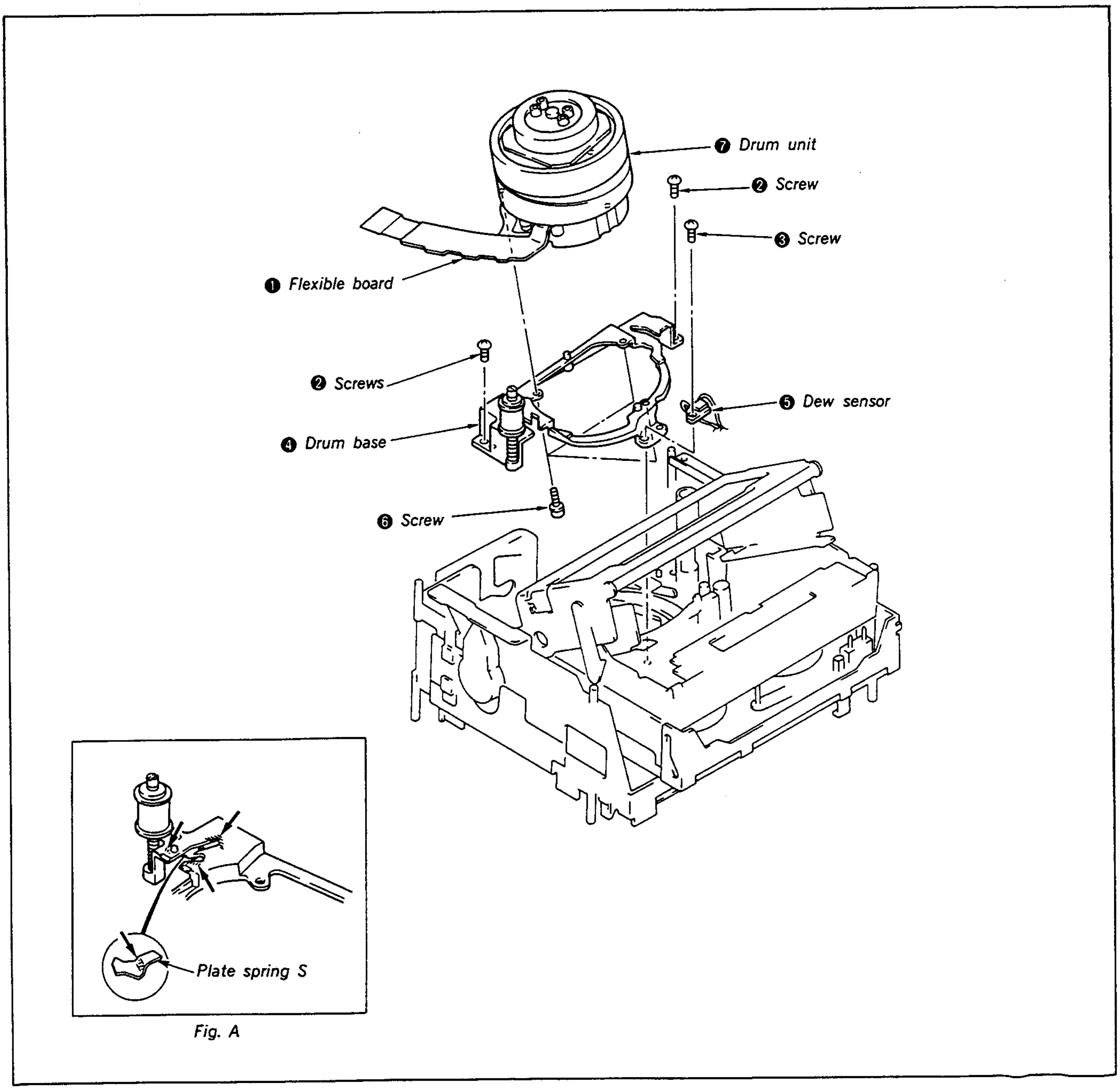

❼ Drum unit
❷ Screw
❸ Screw
❶ Flexible board
❷ Screws
❺ Dew sensor
❹ Drum base
❻ Screw
Plate spring S
Fig. A

Fig. 2-37.

2-3-25. Rotary Upper Drum Replacement

1. Removal

- If recording is possible, record first before removing.

1) Remove the 6 solders indicated by ⓐ and confirm that the board and the pins on the bottom move freely, using tweezers or the like.
2) Remove the two hexagonal socket bolts ❸. (Fig. 2-38.)
3) Mount jig ❻ (Ref. No. J-10) in the screw hole with the two screws ❹, which are supplied. Then when the hexagonal socket bolt ❺ is screwed into the jig, the rotary upper drum will rise and can be removed. (Fig. 2-39.)

2. Mounting

1) Clean the flange surface and the surface of the rotary upper drum ❼ which comes into contact with it, and make sure there are no scratches or dirt.
2) Insert jig ❾ (Ref. No. J-10) into the drum positioning hole, through the rotary upper drum ❼ positioning hole, and set the rotary upper drum.

   Note:

   Confirm that pin ❿ can be seen through rotary upper drum board hole at this time. (Fig. 2-40.)
3) Remove jig ❾ and lightly press rotary upper drum ❼ by hand. However, when it does not go all the way in, tighten hexagonal socket bolts ❸ alternately.
4) Insert jig ❾ into positioning hole ❽ again and make sure it goes in smoothly. If not, loosen the two hexagonal socket bolts ❸ and set again following step 3) under Removal.
5) Tighten the two hexagonal socket bolts ❸.
6) Solder pins ❿.

   Note:

   Be sure that solder does not go under the board.
7) Mount damper ❷ with the two hexagonal socket bolts ❶.

   Note:

   After mounting, perform 2-4. Tape Path Adjustment.

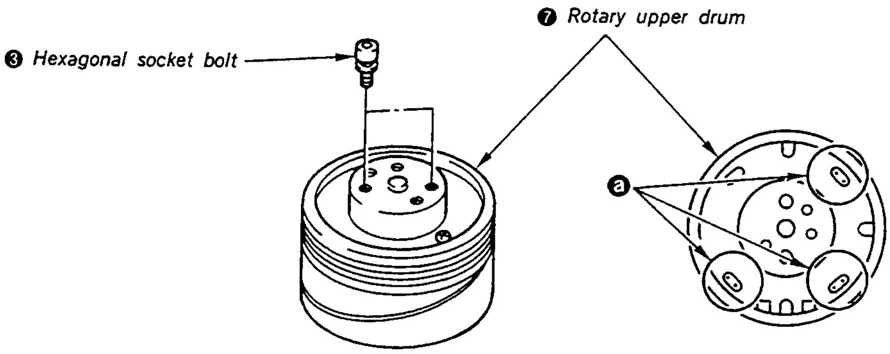


Fig. 2-38.

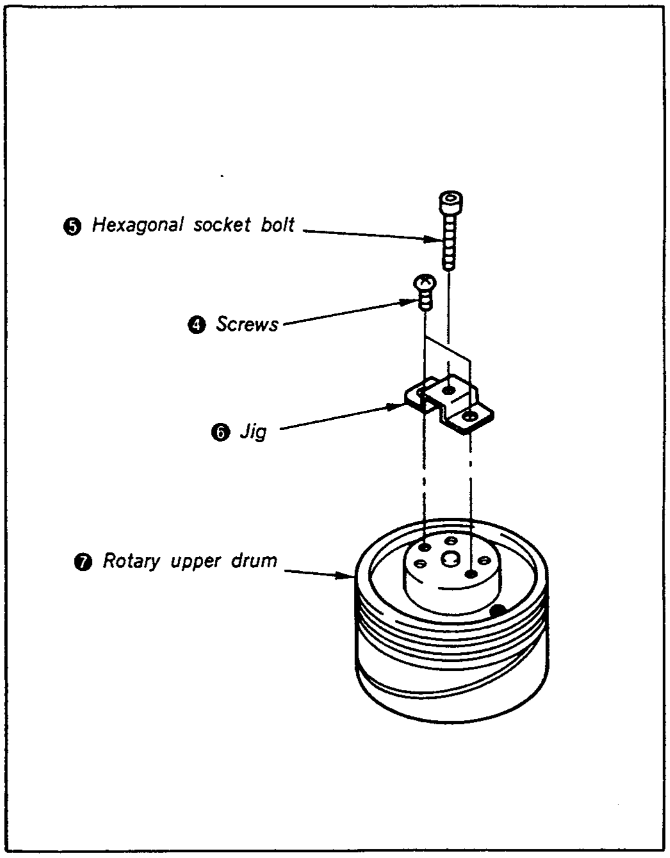

❺ Hexagonal socket bolt
❹ Screws
❻ Jig
❼ Rotary upper drum

Fig. 2-39.

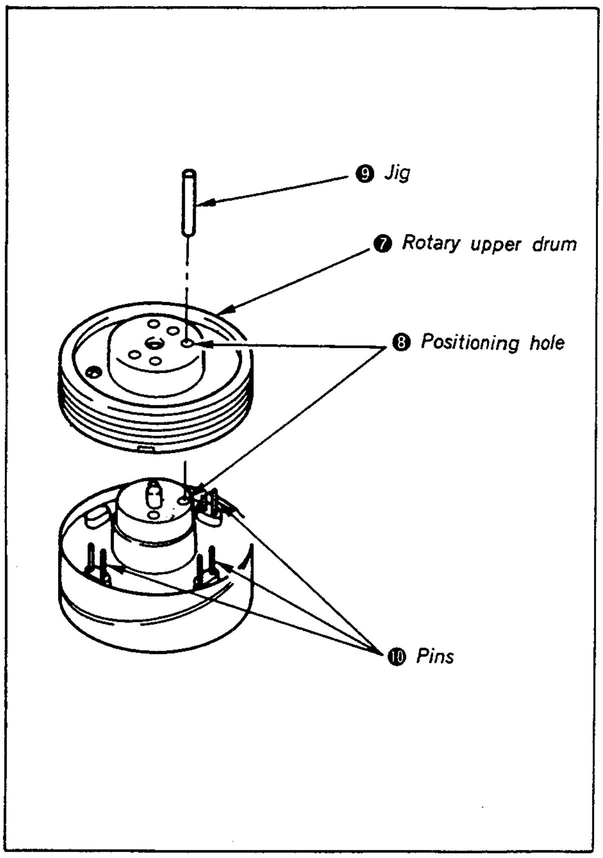

❾ Jig
❼ Rotary upper drum
❽ Positioning hole
❿ Pins

Fig. 2-40.

2-3-26. Reel Table Height Check (Fig. 2-41.)

1. **Removal**

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.

2. **Check**

1) Confirm that the distances between the LS chassis ❶ and S reel table reel bearing surface ❷ and T reel table reel bearing surface ❸ respectively are 6.85 ±0.15mm, using calipers, etc.

3. **Mounting**

1) Refer to 2-3-2. and mount the pendulum stopper plate.
2) Refer to 2-3-1. and mount the reel lock lever assembly.
3) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

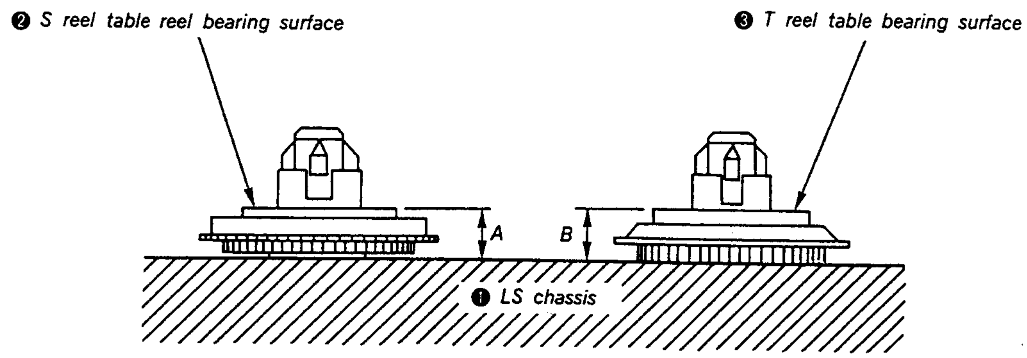

❷ S reel table reel bearing surface
❸ T reel table bearing surface
A
B
❶ LS chassis

Fig. 2-41.

2-3-27. FWD/RVS Torque Check

1) Set the FWD, RVS winding torque cassette (Ref. No. J-9).
2) In FWD mode, confirm that T reel torque value is 11g/cm — 19g/cm.
3) Turn REC/REVIEW button on and check that S reel torque value is 20g/cm — 32g/cm.
4) If the above values are not satisfied, replace the relative reel table.

2-3-28. Tension Regulator Position Adjustment

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.

2. Adjustment

1) Set a cassette tape, put into REC mode and run the tape. (Refer to 2-1-4.)
2) With the tape running, confirm that the portion of TG-1 arm assembly ❶ indicated by arrow Ⓐ is within $\frac{1}{3}$ of the guide ❷ thickness (the portion indicated by arrow Ⓑ). (Fig. 2-42.)
3) If the position is not correct, remove the cassette and perform the adjustment starting with the next step 4).
4) Loosen screw ❸.
5) When TG-1 arm assembly ❶ is further inside than the prescribed position, move tension regulator band plate ❹ slightly in the direction of arrow Ⓒ, and when it is further outside, in the direction of arrow Ⓓ , and secure with screw ❸. (Fig. 2-43.)

Note 1:

The cassette tape should be run at the middle section.

Note 2:

When performing steps 4) and 5), remove the cassette tape first.

3. Mounting

1) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

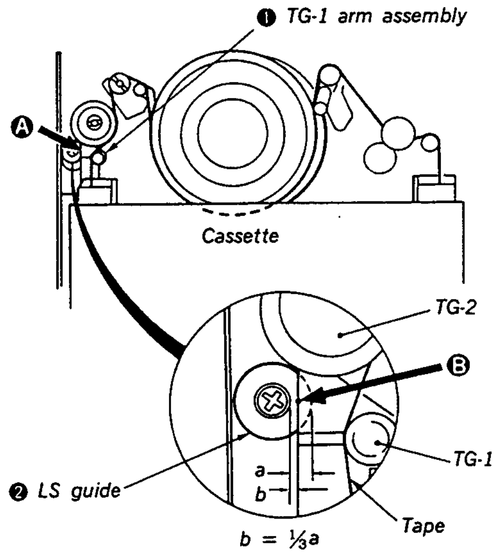


Fig. 2-42.

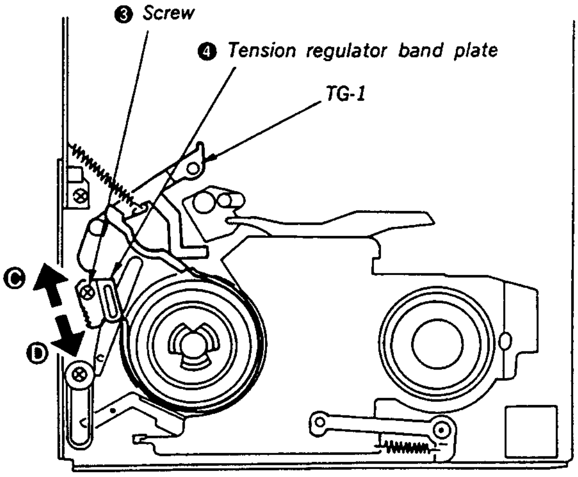


Fig. 2-43.

2-3-29. FWD Back Tension Adjustment

1. Removal

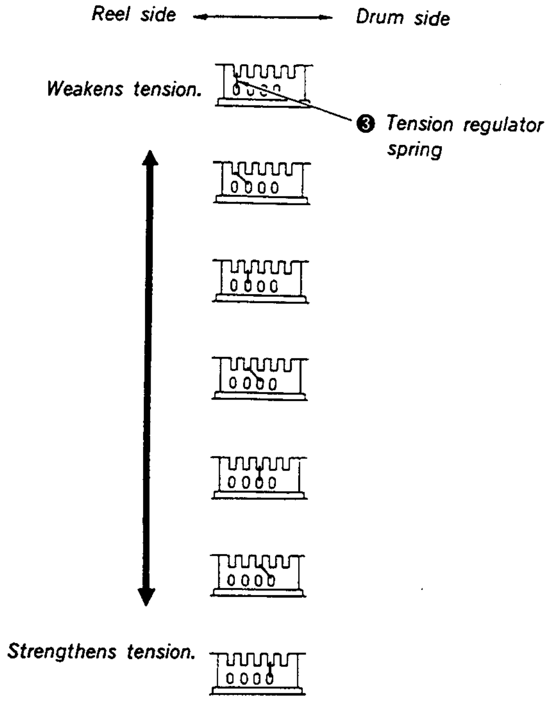
1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.

2. Adjustment

1) Put into REC mode.
2) Set the tension measurement reel (Ref. No. J-7) ❶.
3) Use the dial tension gauge (Ref. No. J-6) ❷ and measure exit side tape tension. At this time, pull the tape at 14mm/sec to measure. (Fig. 2-45.)
4) Change the position of the tension regulator spring ❸ position ❹ so that the tension is 6.9 — 7.9g. (Fig. 2-45, 2-46.)

3. Mounting

1) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.


Reel side ← → Drum side
Weakens tension.
❸ Tension regulator spring
Strengthens tension.

Note: Do not place the spring any nearer to the drum side than this.

Fig. 2-44.

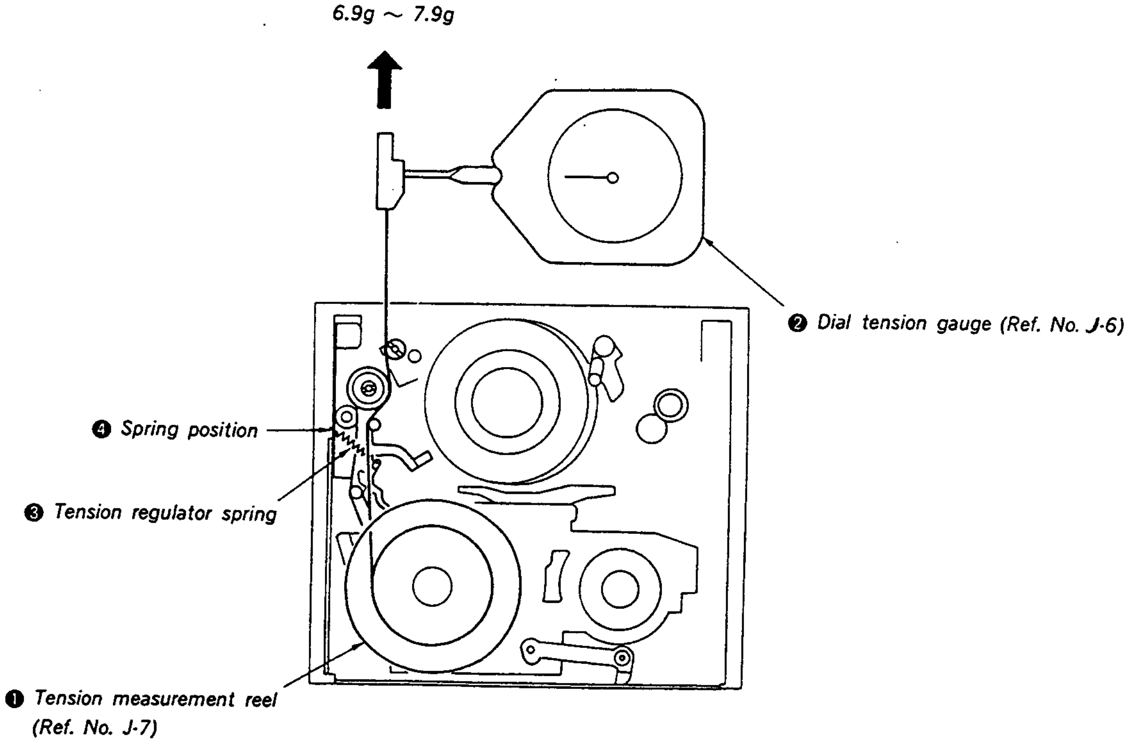

6.9g ~ 7.9g
❷ Dial tension gauge (Ref. No. J-6)
❹ Spring position
❸ Tension regulator spring
❶ Tension measurement reel (Ref. No. J-7)

Fig. 2-45..

2-3-30. TS Gear Assembly (Fig. 2-46.)

1. Removal

1) Refer to 2-1-1. and 2-1-2. and remove the cassette arm assembly and LS cassette compartment assembly.
2) Refer to 2-3-1. and remove the reel lock lever assembly.
3) Refer to 2-3-2. and remove the pendulum stopper plate.
4) Refer to 2-3-4. and remove the T reel table assembly.
5) Remove TS gear assembly ❶.

2. Mounting

1) Mount TS gear assembly ❶ on shaft ❷.
2) Refer to 2-3-4. and mount T reel table assembly.
3) Refer to 2-3-2. and mount the pendulum stopper plate.
4) Refer to 2-3-1. and mount the reel lock lever assembly.
5) Refer to 2-1-1. and 2-1-2. and mount the cassette arm assembly and LS cassette compartment assembly.

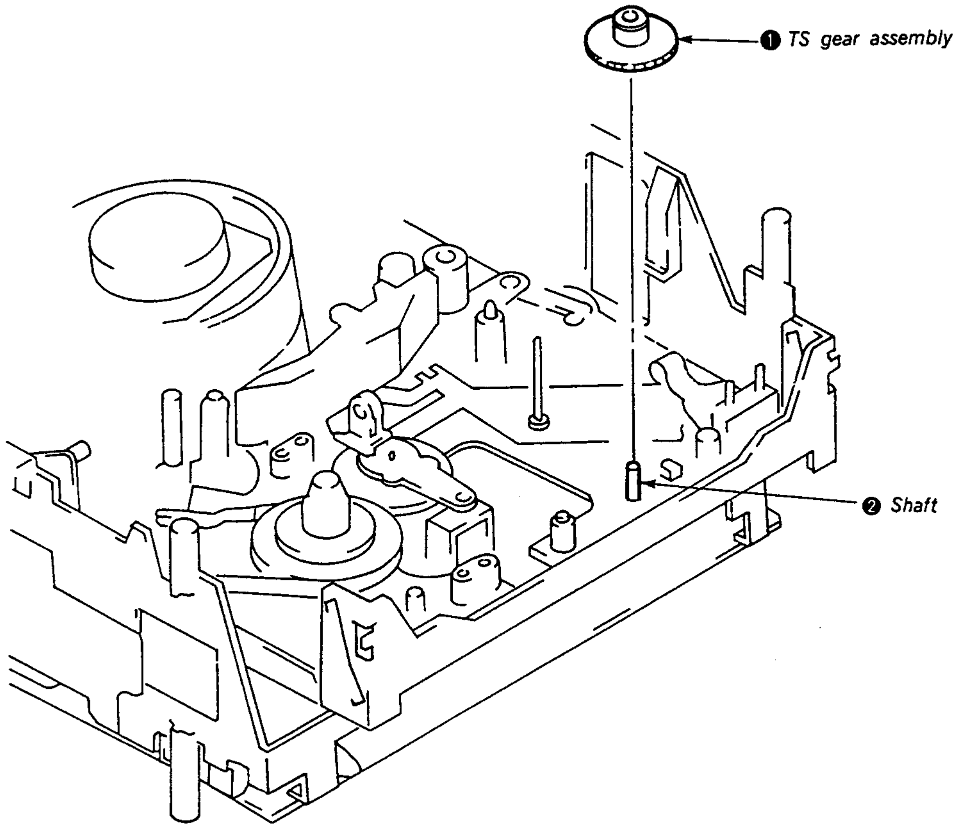


Fig. 2-46.

2-4. TAPE PATH ADJUSTMENT

(Track Shift Jig)

Four types of pilot signals are used to control tape running speed on 8mm video systems, and ATF (Automatic Track Finding) is used for high precision tracking. This does away with the need for a tracking adjustment knob and allows accurate track tracing.

However, some aspects of the ATF system create a problem in adjusting the tape path system. Correction is automatic if the head tracing is a little off, which means that perfect tape path adjustment can not be done.

Therefore, the track shift jig (Ref. No. J-6080-891-A) is used for tape path adjustment. The track shift jig forces ATF to be released, and the tracking amount can be set (track shift) manually, so that tape path adjustment can be performed easily.

- **Confirm that 1. Camera Adjustment and 3. Video Adjustment have been complete before performing this adjustment.**

2-4-1. Track Shift Jig Connection

(Refer to the Track Shift Jig instruction manual for details.)

1. **Connectors**

RF/SWP ··············Pin for extraction of RF SW PULSE and drum head CH1 and CH2 RF signal

CTL ··················Pin which supplies SEL, ATF LOCK, etc. signals

On this set, the RF/SWP and CTL pins are connected with one connector (Ref. No. J-17). No other connectors are used with this jig.

2. **Switch Setting**

SEL ··················"ON" when performing track shift.
When "OFF", control is from the connected set.

PATTERN ············Set to EV side.

ATF LOCK············Set to "OFF".

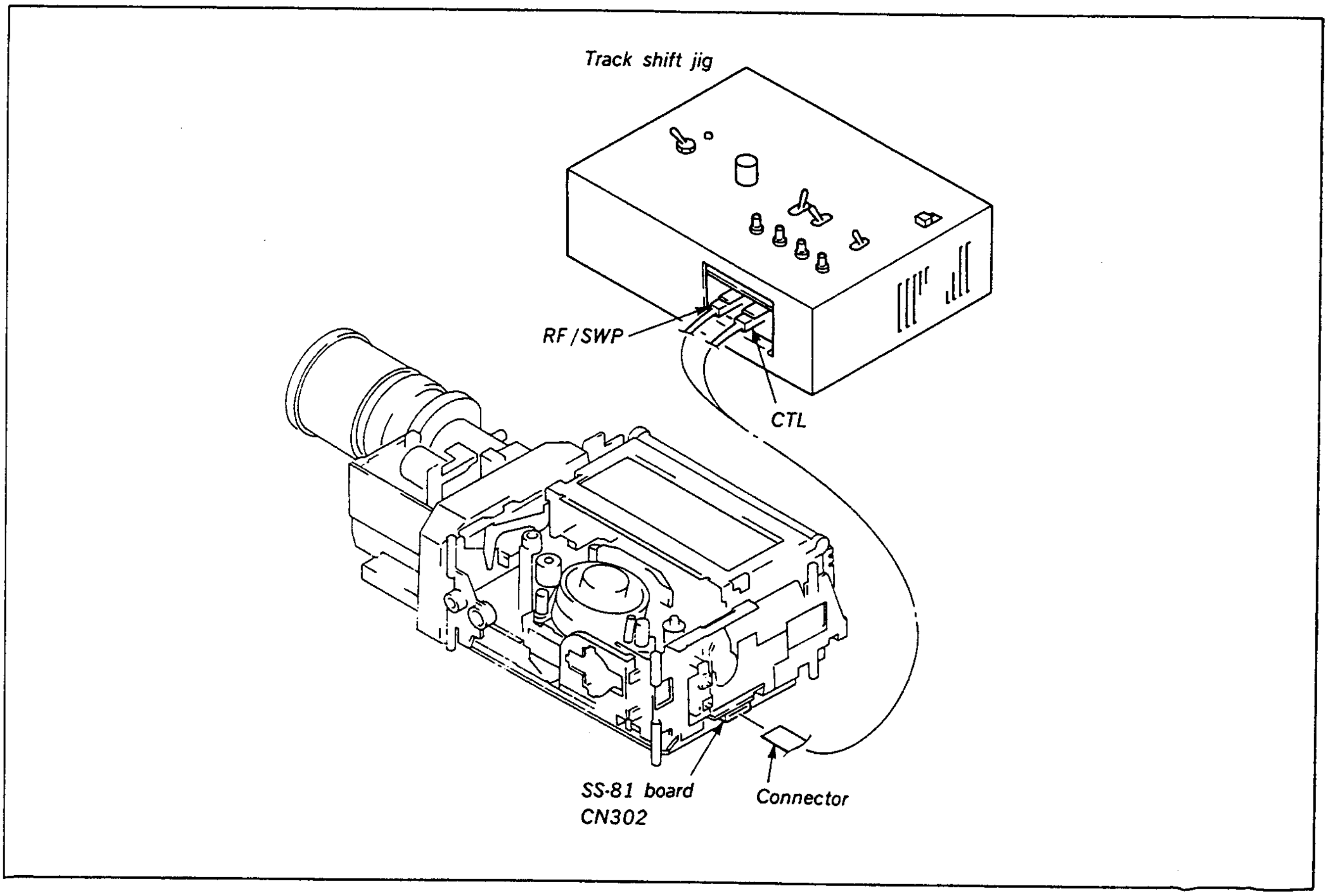


Fig. 2-47.

2-4-2. Preparation for Adjustment

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller).
2) Refer to the track shift jig connection diagram (2-4-1.), connect the track jig and set the switches.
3) Oscilloscope connection:
   CH1: Track shift jig CH2 pin
   (CH2 head output)
   CH2: Track shift jig RF SWP pin
   (External trigger)
4) Play back a tracking alignment tape (WR5-1C).
5) Turn the track shift jig track shift knob and adjust so that RF waveform amplitude is maximum. (Fig. 2-48.)
   When the RF waveform is unstable and difficult to adjust, adjust after turning ATF LOCK switch "ON". Switch to "OFF" after adjusting.

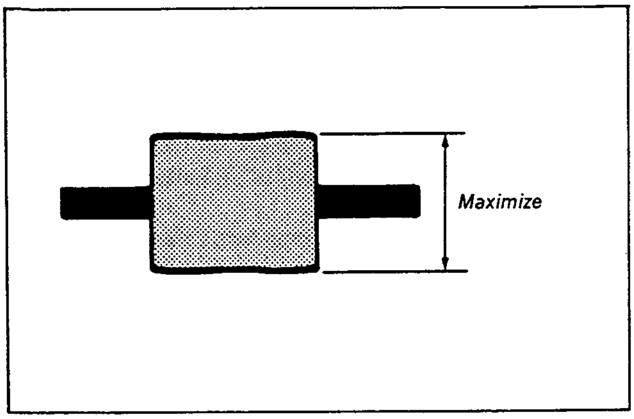


Fig. 2-48.

6) Confirm that the RF waveform is flat at both entrance and exit sides on the oscilloscope. (Fig. 2-49 ⓐ)
   If not, perform the following adjustment.
   When entrance/exit side RF waveform is not flat: (Fig. 2-49 ⓑ ⓒ)
   --- After performing 2-4-3. Tracking Coarse Adjustment, adjust according to 2-4-4. Tracking Fine Adjustment.

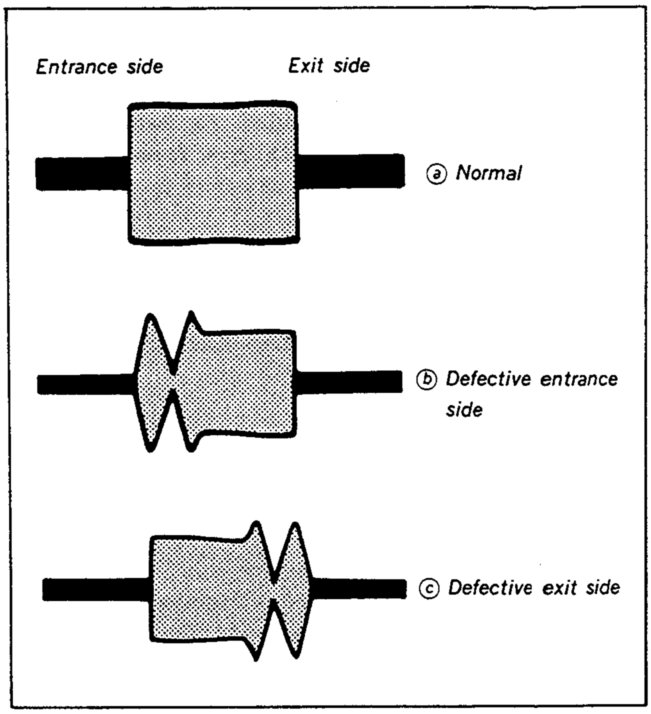

Entrance side
Exit side
ⓐ Normal
ⓑ Defective entrance side
ⓒ Defective exit side

Fig. 2-49.

7) When the RF waveform is OK, perform 2-4-6. Check after Adjustment.

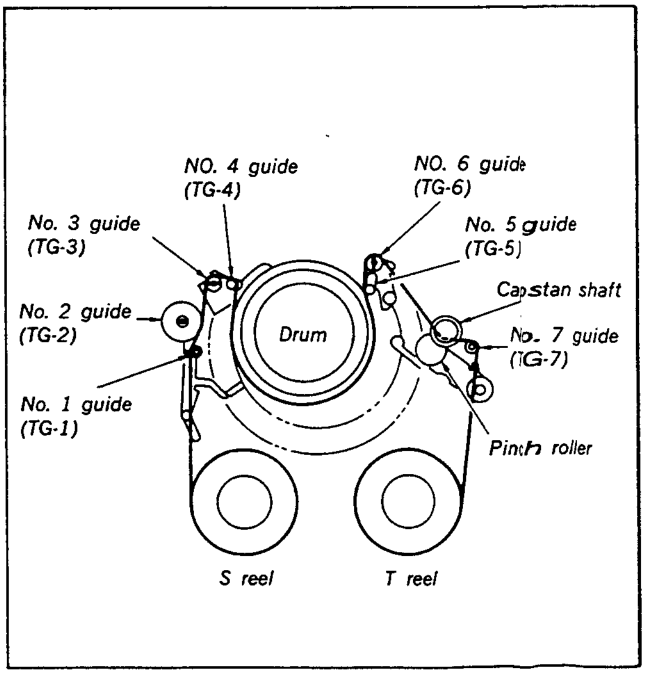

NO. 4 guide (TG-4)
NO. 6 guide (TG-6)
No. 3 guide (TG-3)
No. 5 guide (TG-5)
Capstan shaft
No. 2 guide (TG-2)
Drum
No. 7 guide (TG-7)
No. 1 guide (TG-1)
Pinch roller
S reel
T reel

Fig. 2-50.

2-4-3. Tracking Coarse Adjustment

1) Play back a tracking alignment tape.
2) Turn the track shift jig track shift knob so that RF waveform amplitude is maximum. (Fig. 2-48.)
3) Loosen No. 3 guide (TG-3) lock screw ❶ and turn No. 3 guide so that the entrance side waveform is flat. (Fig. 2-51.)
4) Loosen No. 6 guide (TG-6) lock screw ❷ and turn No. 6 guide so that the exit side waveform is flat. (Fig. 2-52.)

Note:

Do not loosen the lock screws too much or the guide will move by themselves.

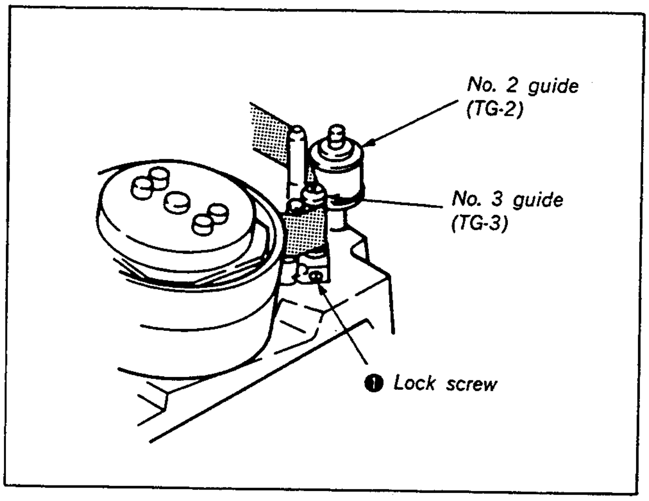


Fig. 2-51.

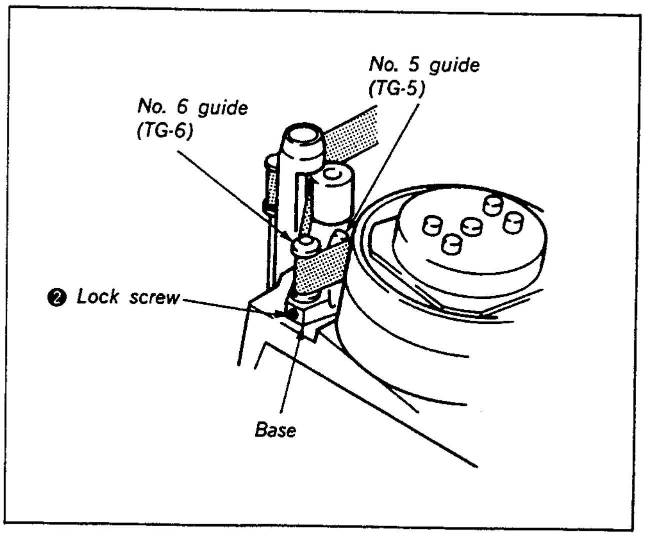


Fig. 2-52.

2-4-4. Tracking Fine Adjustment

1) Play back a tracking alignment tape, turn the track shift jig track shift knob counterclockwise and make the RF waveform amplitude ⅔ of maximum. (Fig. 2-53.)

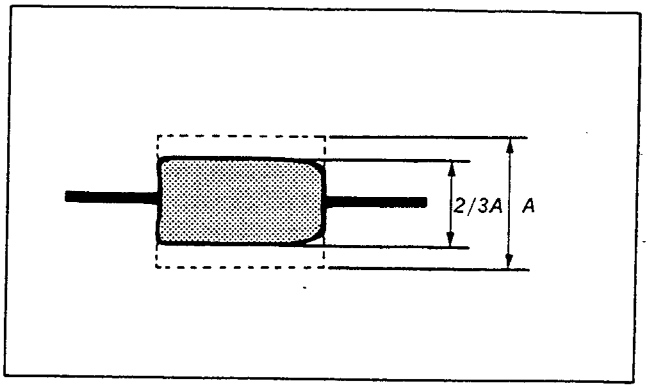


Fig. 2-53.

2) Confirm that the waveform is flat. If it is not, turn No. 3 (TG-3) and No. 6 (TG-6) guides to flatten it. (Fig. 2-51, 2-52.)
3) Tighten No. 3 guide lock screw and lock No. 3 guide. At this time, confirm that the entrance side waveform does not change.
4) Tighten No. 6 guide lock screw and lock No. 6 guide. At this time, confirm that the exit side waveform does not change.

Note:

When tightening No. 6 guide lock screw, hold the base down lightly so that No. 5 guide (TG-5) tip does not touch the drum. (Fig. 2-52.)

2-4-5. No. 2 Guide (TG-2) Adjustment

When No. 2 guide has been rotated or replaced, pre-set height first and then perform adjustment.

1. No. 2 Guide Height Pre-set

1) Screw in TG-2 nut until the slit is the same height as the upper surface of TG-2 shaft. (Fig. 2-54 ⓐ)
   Note:
   Be sure to remove the screw lock completely first.
2) Rotate TG-2 nut 180 degrees clockwise. (Fig. 2-54 ⓑ)

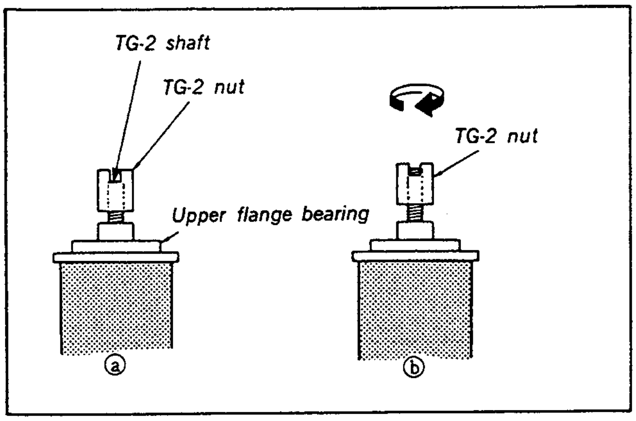


Fig. 2-54.

2. No. 2 Guide (TG-2) Adjustment

1) Play back a tracking alignment tape.
2) Turn track shift jig SEL switch off.
3) Check the waveform in REV mode. (Fig. 2-55.)
   Note:
   Use the beginning (TAPE TOP) of the alignment tape to check.
   If the waveform is not correct, pre-set No. 2 guide height and perform the following adjustment. (Fig. 2-55 ⓐ)

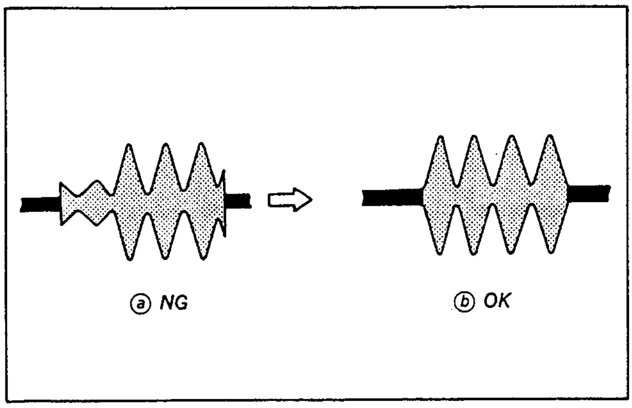


Fig. 2-55.

4) Rotate TG-2 nut 90 degrees clockwise and perform step 3) again. Repeat steps 3) and 4) until the correct waveform is obtained.
   At this time confirm that the tracking waveform has not changed. If it has, perform entrance side tracking fine adjustment and repeat step 3) again.
5) Tighten No. 3 guide (TG-3) lock screw. At this time confirm that the entrance side waveform does not change.
6) Apply screw lock to No. 2 guide (TG-2).

2-4-6. No. 7 Guide (TG-7) Adjustment

1) Play back a tracking alignment tape and put into REV mode.
2) Confirm that there is no tape bending between No. 6 guide (TG-6) and the capstan. (Fig. 2-56) If there is, turn No. 7 guide (TG-7) until the bending disappears.
3) Put into playback again and confirm that there is no ending between No. 7 guide (TG-7) and the capstan.
   Specification: less than 0.5mm
   If there is bending, turn No. 7 guide (TG-7) until it disappears.

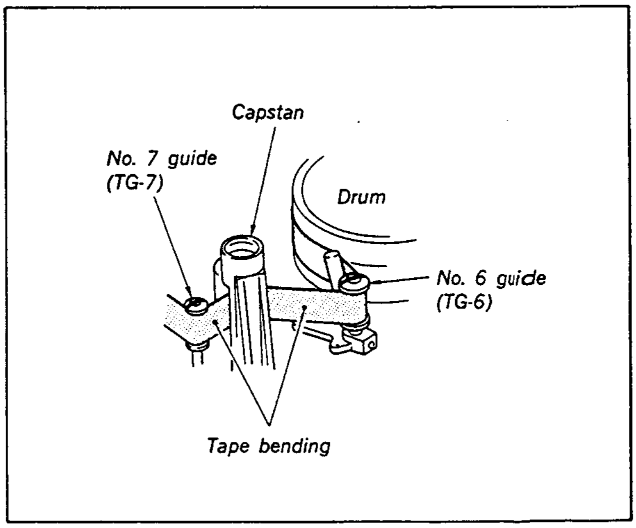


Fig. 2-56.

2-4-7. CUE, REV Waveform Check

1) Play back a tracking alignment tape and put into REV mode.
   The pitch of the waveform peaks should be uniform at this time. (Fig. 2-57 ⓐ)
   If not, perform 2-4-4. Tracking Fine Adjustment and 2-4-5. No. 2 Guide Adjustment.
2) Put into CUE mode. The waveform peak pitch should be uniform. (Fig. 2-57 ⓑ)
   If not, perform 2-4-4. Tracking Fine Adjustment.

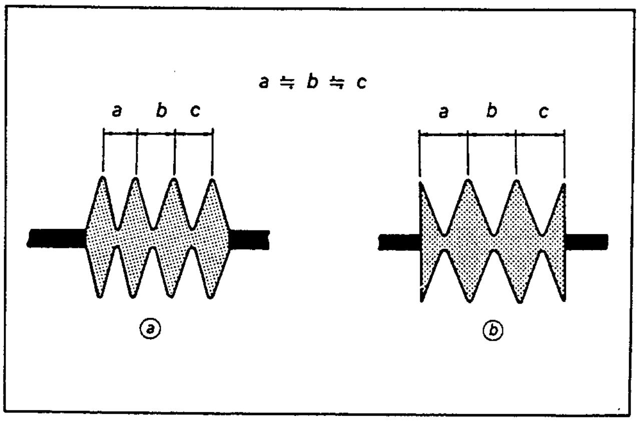


Fig. 2-57.

2-4-8. Check after Adjustment

1. Tracking Check

1) Play back a tracking alignment tape, turn the track shift jig track shift knob and adjust RF waveform amplitude to ⅔ of maximum. (Fig. 2-58.)
2) At this time, confirm that the amplitude minimum value (E_{MIN}) is more than 75% of maximum value (E_{MAX}). (Fig. 2-59.)
3) Confirm that there are no large fluctuations in the waveform. (Fig. 2-60.)

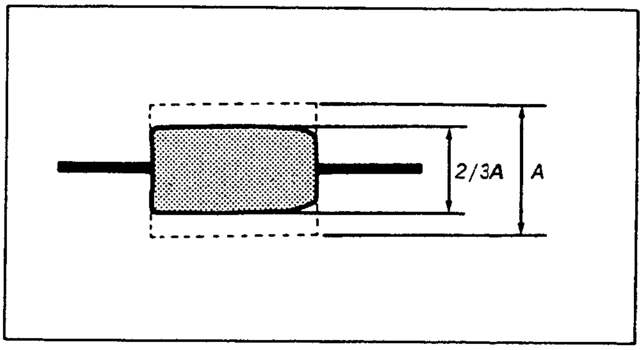


Fig. 2-58.

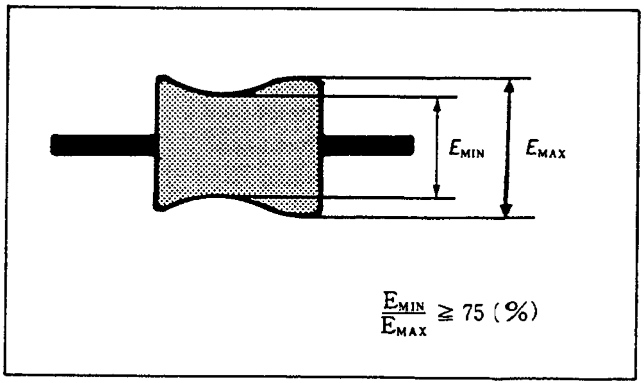


Fig. 2-59.

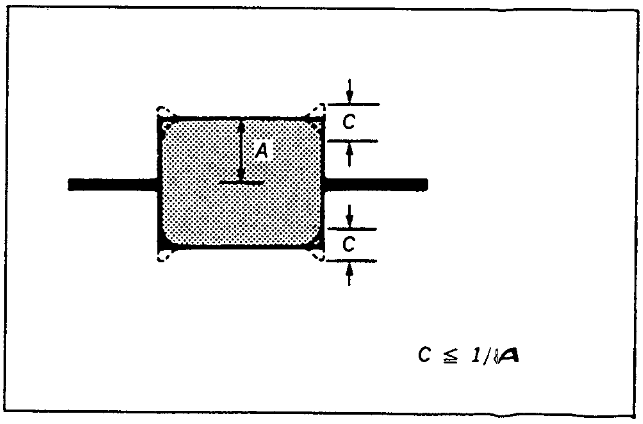


Fig. 2-60

2. Rise Check

1) Play back a tracking alignment tape.
2) Turn track shift jig track shift knob so that RF waveform amplitude is maximum.
3) Eject, then load again.
4) In playback mode, confirm that the RF waveform rises to horizontal within 1 second. Also, confirm that there is no tape bending near the pinch roller at this time. (Fig. 2-61.)
5) Play back after CUE/REV and FF/REW, and confirm that the RF waveform rises to horizontal within 1 second. Also, confirm that there is no tape bending near the pinch roller at this time.
6) Repeat the checks in steps 3) — 5).

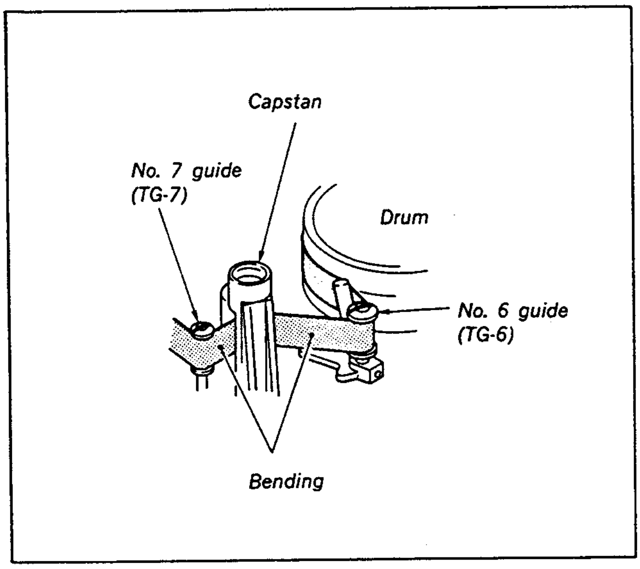

Capstan
No. 7 guide
(TG-7)
Drum
No. 6 guide
(TG-6)
Bending

Fig. 2-61.

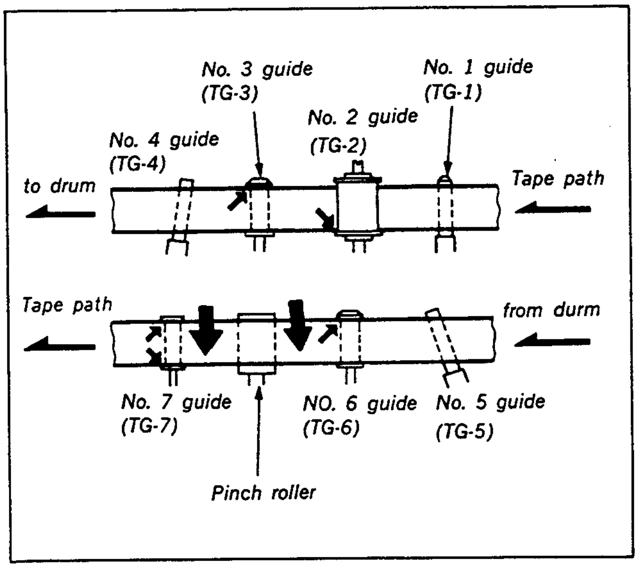

No. 3 guide
(TG-3)
No. 1 guide
(TG-1)
No. 2 guide
(TG-2)
No. 4 guide
(TG-4)
to drum
Tape path
Tape path
from durm
No. 7 guide
(TG-7)
NO. 6 guide
(TG-6)
No. 5 guide
(TG-5)
Pinch roller

Fig. 2-62.

3. Tape Running Check

In playback mode, make sure there are no spaces or large curls at No. 2 guide lower flange, No. 3 guide upper flange and No. 6 guide upper flange, and that there is no curl at No. 7 guide upper and lower flanges. (Fig. 2-62.)

SECTION 3
ELECTRICAL ADJUSTMENT (VIDEO SYSTEM)

During the adjustment, see the parts location diagram relevant to the adjustments on pages 254, 255.

The following measuring instruments are needed in adjusting the VTR section:

[Equipment required]

1) Monitor TV
2) Oscilloscope Dual-trace, Bandwidth more than 10MHz with delay mode (Use a probe of 10:1, unless otherwise specified.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
19) Stabilized power supply unit
11) Alignment tape
   For tracking adjustment (WR5-1C)
   Part number: 8-967-995-06
   For video frequency response adjustment (WR5-6C) *1
   Part number: 8-967-995-17
   For operation check (WR5-4CL) *2
   Part number: 8-967-995-56
   For operation check (WR5-5CSP) *3
   Part number: 8-967-995-47

[Precaution for adjustment]

Except "Battery Failure Adjustment" in System Control Adjustment and "EVF display position adjustment" in Video System Adjustment. The video section can be also adjusted without the camera section. Remove the camera section by disconnecting the following 6 connectors:

1. VC-24P board CN801
2. VC-24P board CN702 (FP-71 board)
3. VC-24P board CN703 (FP-75 board)
4. FD-4P board CN152
5. AF-32 board CN002 (FP-59 board)
6. Connector between DC-DC converter and VC-23P board

EVF (Electrical View Finder) section is only neccessary for "Battery failure adjustment". Remove the section by disconnecting the following connector.

1. VA-36 board CN333

MIC board (MC-17P board) is not neccessary for Video section adjustment. Remove the board by disconnecting the following connector.

1. VA-36 board CN502

[Equipment connection]

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown in the figure below. (CN801 should be removed from VC-24P board of Camera section.)

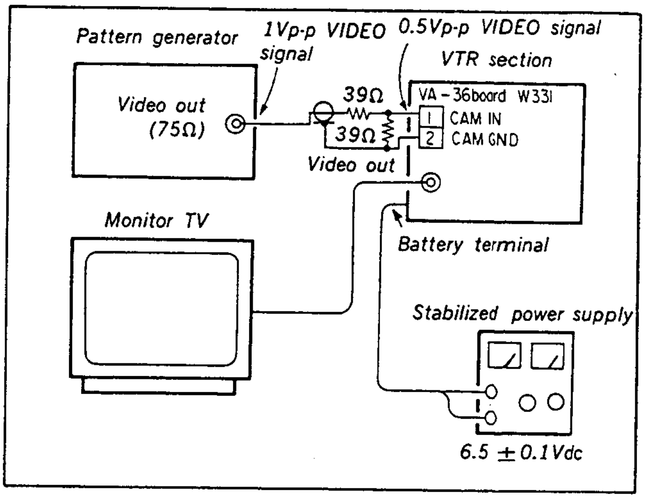


Fig. 3-1.

[Setting up for adjustment]

Video signals output by an pattern generator are used as adjustment signals when adjusting the video section, and these video output signals should be within the required standard. Connect an oscilloscope to Pin ① of W331 (CAM IN) on the VA-36 board. Confirm that the amplitudes of video signal SYNC signals, of picture portions, and of burst signals are flat at approximately 0.15, 0.35 and 0.15V respectively, and that the level ratio of the burst signals and "red" signals are 0.30:0.66. Fig. 3-2 shows video signals (color bars) used in the video section adjustments.

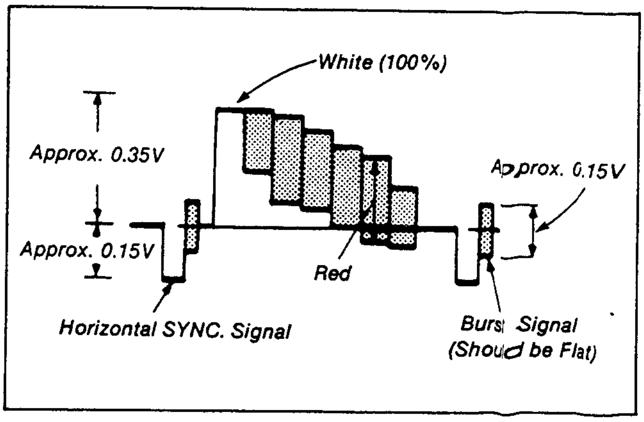


Fig. 3-2. Pattern generator color bar signals

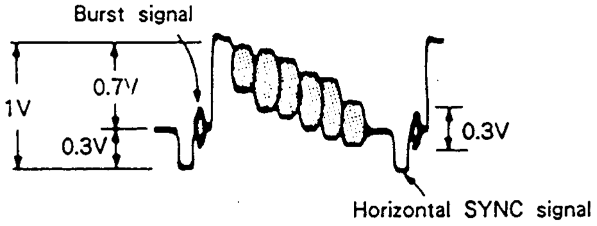
*1. WR5-2C (8-967-995-16) is also available.
*2. WR5-3CL (8-967-995-36) is also available.
*3. WR5-4CSP (9-967-995-46) is also available.

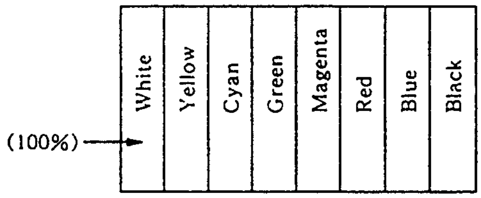
[Alignment tape]

<table>
<tr><th>Tape</th><th>Content</th><th>Use</th></tr>
<tr><td>Tracking
(WR5-1C)</td><td>1. Recording area : PCM−video
2. Recording content : CH2 : 1MHz linearity adjustment signal (CH1 : 9MHz)</td><td>Drum linearity adjustment</td></tr>
<tr><td>Video Frequency Characteristics
(WR5-6C)</td><td>1. Recording area : Video
2. Recording content : RF sweep 0 to 10MHz
3. Maker : 1, 3.58, 5.5 and 7MHz</td><td>Frequency characteristics adjustment</td></tr>
<tr><td>Operation Check

SP mode
(WR5-5CSP)
LP mode
(WR5-4CL)

Note :
PCM area is not included in WR5-4CL</td><td>1. Recording area : Video
2. Recording content :
■ Video track
• Video signals Color bars 4min
Monoscope 4min
(Colour bars)





• Audio signals (AFM)
400Hz 60% modulation
■ PCM area (WR5-5CSP only)
• Audio signals (PCM)
1kHz 4min color bar section
20Hz 20sec }
400Hz 20sec } Iterative
14kHz 20sec }</td><td>Operation check</td></tr>
</table>

[Required level and impedance of input/output signal]

Video output	Pin jack Output signal: 1Vp-p, 75Ω unbalanced, sync negative
Mic input	Mini jack Input level: −66dBs, low impedance
Audio output	Pin jack Specified output: −10dBs Loading impedance: less than 10kΩ

[Service mode]

Lead the unit to service mode by the following procedures.

1. Service mode start

When SVP testpoints TP155 and TP156 on FD-4P board is shorted for more than a second, service mode goes to 1 and all segments in LCD of FD board lights up. After this, every time the land is shorted, the service mode turns as follows:

Service mode 2
↓
Service mode 3
↓
Service mode 4
↓
Service mode 5
↓
Service mode 6

The number of the service mode is shown at the most right digit on the LCD (except Service mode 1).

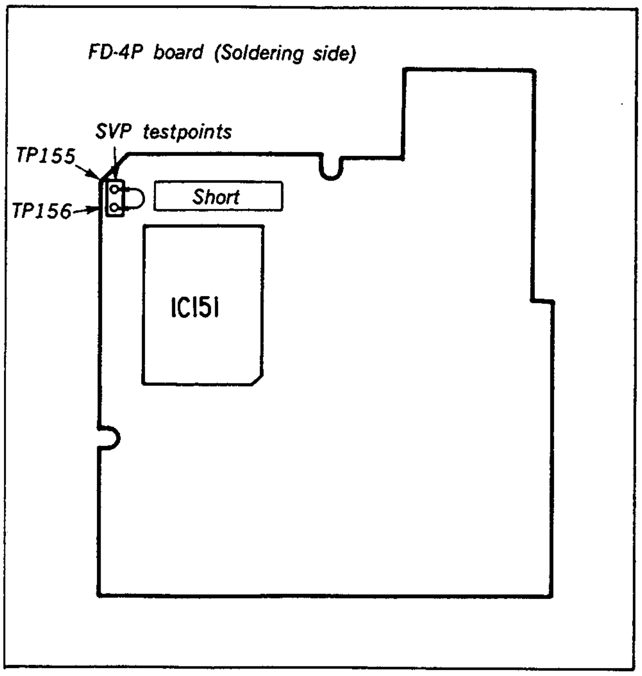

FD-4P board (Soldering side)
SVP testpoints
TP155
TP156
Short
IC151

Fig. 3-3.

2. Service mode release

Short SVP land after the Service mode 6 comes out, and it makes the service mode release.

3. Indication on LCD

Following codes are shown on the LCD (Liquid crystal display) of FD-4P board at each service mode except Service mode 1.

① Present executing operation mode
It is indicated by two-digits at each service mode except Service mode 6. (See Table 3-1.)

② Following executing operation mode
(When there is no command of following operation, present executing operation mode is shown.)
It is indicated by two-digits. (See Table 3-1.)

③ Warning code
When something unusual happens, the cause is shown by a digit code. (See Table 3-2.)

④ Service mode number

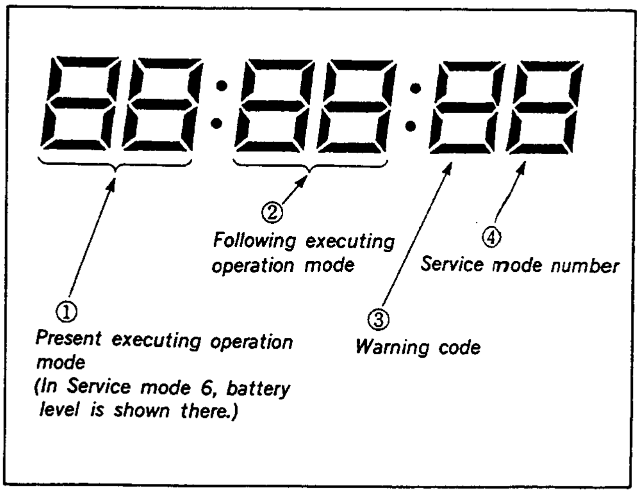

②
Following executing operation mode
④
Service mode number
①
Present executing operation mode
(In Service mode 6, battery level is shown there.)
③
Warning code

Fig. 3-4. Indication on LCD

Table 3-1. Code for operation mode

Code	Operation mode	Code	Operation mode	Code	Operation mode
00	INITIAL	83	REW	46	CUE
01	EJECTED	04	VTR REC	56	REV
42	DEW	14	REC PAUSE	6	FR SEARCH CUE
31	UNLOADING	44	INSERT	−6	FR SEARCH REV
02	STOP READY	54	INSERT PAUSE	07	STILL
12	LOADING	4	CAM REC	27	1/5 SLOW
32	STOP BATTERY DOWN	−4	CAM STANDBY	47	1/10 SLOW
52	STOP EMERGENCY	85	EDIT CUE	67	FRAME
62	STOP TAPE END	95	EDIT REV	69	REC REVIEW
72	STOP TAPE TOP	06	PB		
03	FF	36	−×1		

Table 3-2. Warning code

Code	Cause of abnormal inoperation (detected by Mechanism control IC001 on SS-81 board)
0	Normal
1	Error in loading/unloading
2	Error of capstan speed. (Pulse is not fed to IC001 pin ⑱ (CFG) or the pulse frequency is too low.)
3	Error of capstan speed. (Pulse frequency at IC001 pin ⑱ is too high.)
4	Error in reel ratation. (Pulse is not fed to IC001 pin (63) (T reel FG) or pin (64) (S reel FG.)
5	Error in drum ratation. (Pulse frequency at IC001 pin ⑰ (DFG) is too high or too low.)
6	Error in drum phase. (Drum phase is not locked.)

4. Description of the service modes

[Service mode 1]

All segments in LCD light up.

[Service mode 2]

START/STOP button (S951 on SW-40P board) is not accepted.

[Service mode 3]

"Switching position adjustment" can be performed in playback mode.

[Service mode 4]

CH1—CH1' playback is performed in playback mode, and also "CH1' head playback frequency response adjustment" can be performed.

[Service mode 5]

Emergency inoperation by the following detection of abnormality is released.

1. Dew detection
2. Battery down detection
3. Error detection in loading/unloading
4. Error detection in drum rotation
5. Error detection of drum phase
6. Error detection of capstan (no CFG pulse)
7. Error detection of capstan
   (CFG pulse frequency is too high.)

[Service mode 6]

"Battery failure adjustment" can be performed.

Battery level is indicated at most left two-digits. Or mark "X" is shown in lower center on screen of a monitor TV at CAMERA mode.

3-1. POWER SUPPLY ADJUSTMENT

3-1-1. VA 5V, SS 5V Voltage Check (SS-81 board)

Mode	E-E
Signal	Arbitrary
Measurement point	FP-71 (Flexible) board pin ① and pin ②
Measuring instrument	Digital voltmenter
Specified value	5.10 ±0.05Vdc

[Checking method]

Confirm that the voltage at pin ① and ② of FP-71 board satisfies the specification.

3-2. SYSTEM CONTROL ADJUSTMENT

3-2-1. Battery Failure Adjustment (SS-81 board)

Mode	Record
Subject	Arbitary
Measurement point	+: (+) battery terminal of FP-70P board −: (−) battery terminal of FP-70P board
Measuring instrument	Digital voltmeter
Adjusting element	RV001
Specified value	The digits on the counter of LCD indicate "92", when power supply voltage is 5.68 ±0.01Vdc.

Note 1:

Connect a stabilized power supply unit and the battery terminals ((+) and (−) of FP-70P board) with thick and short lead wires.

Note 2:

Camera section and EVF one should be connected to the unit.

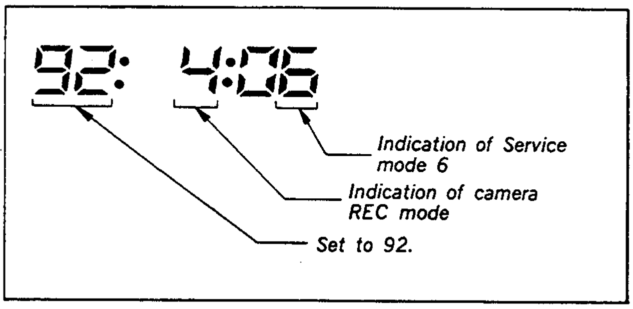


Fig. 3-5.

[Adjusting method]

1) Confirm that the Service mode 6 is set.
2) Make the power supply voltage to 6.5 ±0.1Vdc.
3) Turn on the power (from OFF).
4) Make the camera to REC mode.
5) Down the power supply voltage slowly to 5.85 ±0.01Vdc
6) Either of the following indications should be indicated on LCD.
   1) No 🪫 indication
   2) 🪫 indication blinks slowly (1Hz).
7) Down the power supply voltage slowly to 5.65 ±0.01Vdc. Confirm that the 🪫 indication blinks rapidly (4Hz).
8) Release the service mode (See [Service mode] .).

3-2-2. Clock Adjustment (FD-4P board)

Mode	E-E
Measurement point	IC151 pin (54)
Measuring instrument	Frequency counter
Adjusting element	CT151
Specified value	512.001 $^{+0.002}_{-0.001}$Hz

[Checking method]

Adjust CT151 so that the frequency counter reading is 512.001 $^{+0.002}_{-0.001}$Hz.

3-3. SERVO SYSTEM ADJUSTMENT

3-3-1. Capstan Free Speed Check (SS-81 board)

Mode	Record (SP mode)
Signal	Color bar
Measurement point	IC001 pin ⑱ (CFG)
Measuring instrument	Frequency counter
Specified value	1154 ±1Hz

[Checking method]

Confirm that the CFG frequency is 1154 ±1Hz.

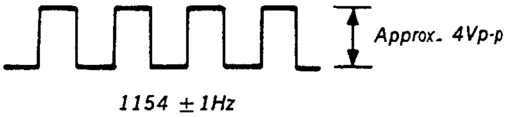


Fig. 3-6.

3-3-2. Switching Position Adjustment (SS-81 board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-3CSP)
Measurement point	CH1: VIDEO OUT (VA-36 board CN332) CH2: SS-81 board pin ② of CN302 (RF SWP)
Measuring instrument	Oscilloscope
Adjusting element	RV002
Specified value	6.5 ±0.3H (416 ±20μsec)

[Adjusting method]

1) Make the unit to Service mode 3 (See [Service mode] .).
2) Adjust RV002 for 6.5±0.3H (416 ±20μsec).
3) Release the service mode.

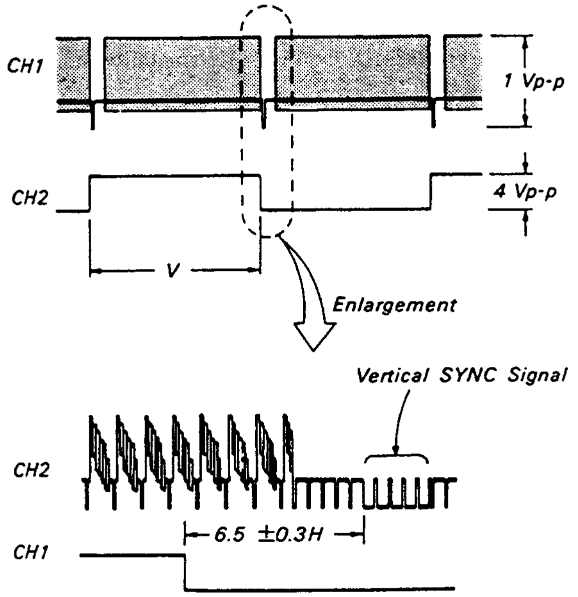

CH1
1 Vp-p
CH2
4 Vp-p
V
Enlargement
Vertical SYNC Signal
CH2
6.5 ±0.3H
CH1

Fig. 3-7.

3-3-3. ATF BPF Balance Adjustment (VA-36 board)

Mode	Playback
Signal	Self-recorded tape
Measurement point	Pin ⑪ of the AT-6 board Pin ⑫ of the AT-6 board
Measuring instrument	Oscilloscope
Measuring element	RV251
Specified value	The 16kHz signal level (pin ⑫) is equal to the 47kHz signal level (pin ⑪).

[Adjusting method]

1) Playback the self-recorded tape.
2) Connect oscilloscope to pin ⑪ of the AT-6 board and read the 47kHz signal level (approx. 2Vp-p).
3) Connect oscilloscope to pin ⑫ of the AT-6 board.
4) Adjust RV251 so that the 16kHz signal level is equal to the one of 47kHz signal.

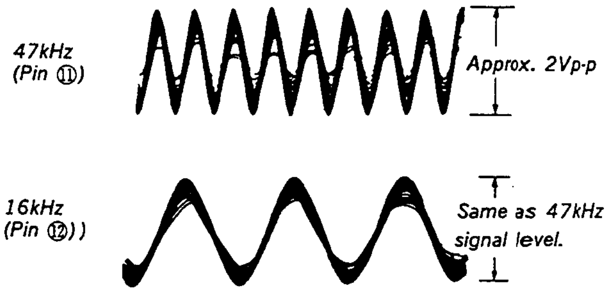

47kHz
(Pin ⑪)
Approx. 2Vp-p
16kHz
(Pin ⑫))
Same as 47kHz signal level.

Fig. 3-8.

3-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle be followed the undermentioned adjustment procedure.
The color video signal supplied from the pattern generator is utilized as the video input signal of the video system adjustment in recording mode. Make sure to check that the SYNC signal and color burst signal are matched with those in the set-up of during the adjustment of as shown in Fig. 3-2.

[Adjustment procedure]

1) Playback frequency response adjustment
2) Flying erase check
3) Crystal oscillator f_0 adjustment
4) Chroma comb type filter adjustment
5) Y comb type filter adjustment
6) SYNC AGC adjustment
7) Video out level adjustment
8) PB Y level adjustment
9) Y FM carrier frequency adjustment
10) Y MF deviation adjustment
11) AC clip adjustment
12) $375f_H$ VCO adjustment
13) Chroma emphasis f_0 adjustment
14) Carrier balance adjustment
15) f_H VCO adjustment
16) GCA GAIN adjustment
17) REC C RF trap adjustment
18) AFM trap adjustment
19) REC Y recording current adjustment
20) REC C recording current adjustment
21) REC AFM recording current adjustment
22) DDS character position adjustment

3-4-1. Playback Frequency Response Adjustment (RP-47P/SS-81 boards)

(1) CH1, CH2 adjustment

CH2 adjustment is shown in [ ] .

Mode	Playback
Signal	Alignment tape for frequency response adjustment. (WR5-2C)
Measurement point	Pin ④ [③] of CN302 in SS-81 board External trigger: Pin ② of CN302 in SS-81 board Trigger slope: + [−]
Measuring instrument	Oscilloscope
Adjusting element	RV001 [RV002] in RP-47P board
Specified value	3.58MHz level: 5.5MHz level = 4 : 3

[Adjusting method]

1) Adjustment RV001 [RV002] so that the level difference ratio between 3.58MHz and 5.5MHz should be 4:3.

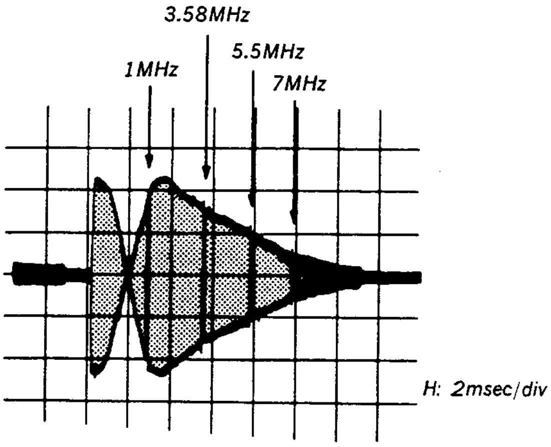


Fig. 3-9.

(2) CH1' adjustment

Mode	Playback at Service mode 4 *1 or Playback pause
Signal	Alignment tape for frequency response adjustment (WR5-2C)
Measurement point	Pin ⑤ of CN302 in SS-81 board External trigger: pin ② of CN302 in SS-81 board Trigger slope: −
Measuring instrument	Oscilloscope
Adjusting element	RV050 in RP-47P board
Specified value	3.58MHz level: 5.5MHz level = 4:3

*1 Make the unit to service mode 4 with reference to [Service mode] , and make sure to release it after the adjustment.

[Adjusting method]

Adjust RV050 so that the level difference ratio between 3.58MHz and 5.5MHz should be 4:3.

3-4-2. Flying Erase Check (SS-81 board)

Mode	Record
Signal	Arbitrary
Measurement point	Pin ⑫ of CN301 (FE (X))
Measuring instrument	Oscilloscope and frequency counter
Specified value	Frequency: 7.0 ±0.5MHz Voltage: 8.0 ±1.0Vp-p

Note: Be sure to use MP type tape.

[Checking method]

Confirm that the oscillation frequency is 7.0 ±0.5MHz, and the oscillation voltage is 8.0 ±1.0Vp-p.

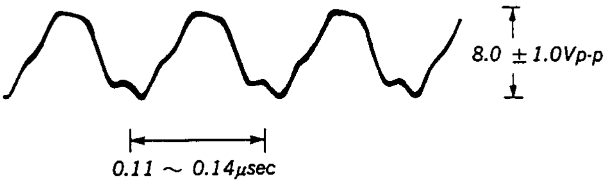


Fig. 3-10.

3-4-3. Crystal Oscillator f_0 Adjustment (CC-10/VA-36 boards)

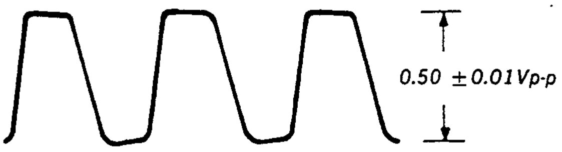
Mode	Playback
Signal	Alignment tape for operation check (WR5-3CSP)
Measurement point	Pin ㉕ of CC-10 board
Measuring instrument	Frequency counter
Adjusting element	CV331 on VA-36 board
Specified value	4433619 ±50Hz

Note:

Connect the frequency counter through a buffer of high impedance (approx. 10MΩ) and low capacity (less than 10PF).

[Adjusting method]

Adjust CV331 for 4433619 ±50Hz.



(4433619 ±50Hz)

Fig. 3-11.

3-4-4. Chroma Comb Type Filter Adjustment (YP-8/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	Pin ③ of YP-8 board
Measuring instrument	Oscilloscope
Adjusting element	RV001 on YP-8 board LV331 on VA-36 board
Specified value	Minimum residual chroma component

[Connection]

Connect Q353 base to GND with a jumper wire.

[Adjusting method]

1) Adjust RV001 on YP-8 board and LV331 on VA-36 board alternately to minimize residual chroma component.

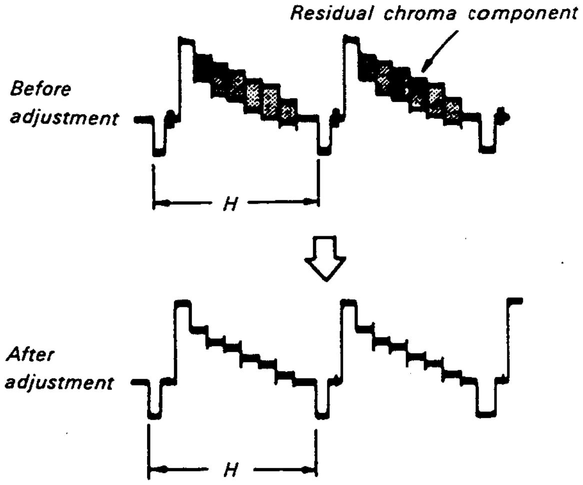


Fig. 3-12.

3-4-5. Y Comb Type Filter Adjustment (YP-8/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	Pin ⑩ of YP-8 board
Measuring instrument	Oscilloscope
Adjusting element	RV002 on YP-8 board
Specified value	The amplitude between the yellow level center and the pedestal is 50 ±25mVp-p.

- **Note:**

Be sure to connect a 22kΩ of resistor in series between Pin ⑩ of YP-8 board and 10:1 probe.

[Adjusting method]

1) Adjust with RV002 on YP-8 board so that the amplitude between the yellow level center and pedestal becomes 50 ±25mVp-p.
2) While playing back a tape in which dropouts are recorded, be sure to confirm that these dropouts are not discernible. In the event the dropouts become discernible, adjust with RV002 so that they become undiscernible.

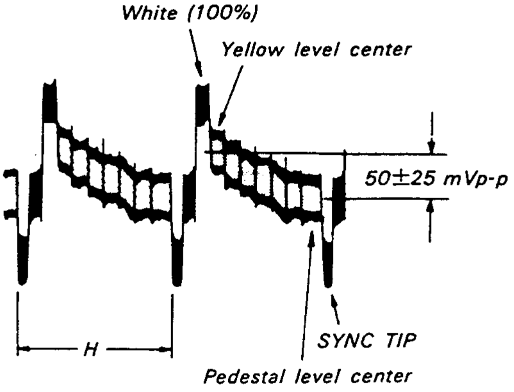


Fig. 3-13.

3-4-6. SYNC AGC Adjustment (VA-36 board)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	Pin (53) of YP-8 board
Measuring instrument	Oscilloscope
Adjusting element	RV334 on VA-36 board
Specified value	0.50 ±0.01Vp-p

[Adjusting method]

1) Adjust RV334 on VA-36 board for 0.50 ±0.01Vp-p.

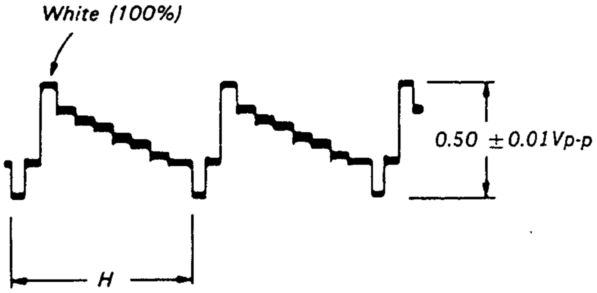


Fig. 3-14.

3-4-7. Video Out Level Adjustment (YP-8/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	CN332 (VIDEO OUT) on VA-36 board
Measuring instrument	Oscilloscope
Adjusting element	RV007 on YP-8 board
Specified value	1.00 $^{+0.025}_{-0.05}$Vp-p

Note:

Be sure to terminate CN332 (VIDEO OUT) at 75 ohms.

[Adjusting method]

1) Adjust RV007 on YP-8 board for 1.00 $^{+0.025}_{-0.05}$Vp-p

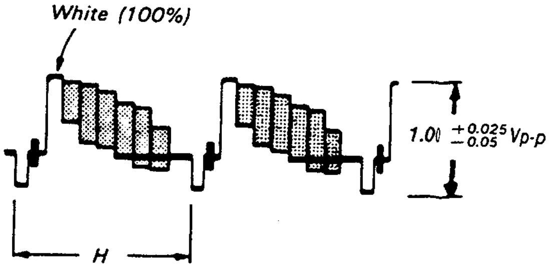


Fig. 3-15.

3-4-8. PB Y Level Adjustment
(YP-8/VA-36 boards)

Mode	Playback
Signal	Alignment tape for operation check (WR5-3CSP), Color bar portion
Measurement point	CN332 (VIDEO OUT) on VA-36 board
Measuring instrument	Oscilloscope
Adjusting element	RV003 on YP-8 board
Specified value	1.00 ±0.05Vp-p

Note 1:

Be sure that the SP/LP/EDIT switch is the SP position.

Note 2:

Be sure to terminate CN332 (VIDEO OUT) at 75 ohms.

[Adjusting method]

1) Adjust RV003 on YP-8 board for 1.00 ±0.05Vp-p.

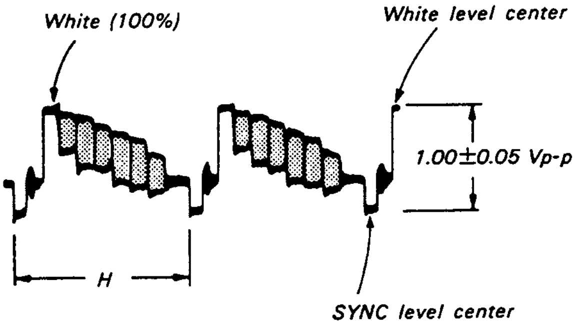


Fig. 3-16.

3-4-9. Y FM Carrier Frequency Adjustment
(YP-8/VA-36 boards)

Mode	CAMERA STANDBY
Signal	No signal
Measurement point	Pin ㊵ of YP-8 board (REC, Y RF)
Measuring instrument	Frequency counter
Adjustment element	RV006 on YP-8 board
Specified value	4.20 ±0.03MHz

[Adjusting method]

1) Set RV005 (AC CLIP) on YP-8 board to the mechanical center (slide terminal for RV005 being approx. 2.7Vdc).
2) Adjust to 4.20 ±0.03MHz with RV006 of the YP-8 board.
3) Make "deviation Adjustment", and "AC clip Adjustment".

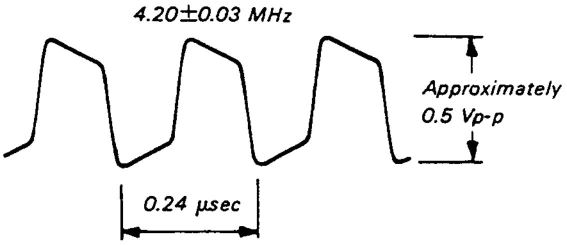


Fig. 3-17.

3-4-10. Y FM Deviation Adjustment
(YP-8/VA-36 boards)

Mode	Record and Playback (SP mode)
Signal	Color bar
Measurement point	CN332 (VIDEO OUT) on VA-36 board
Measuring instrument	Oscilloscope
Adjusting element	RV004 on YP-8 board
Specified value	Playback level: 1.00 ±0.05Vp-p

Note 1:

Be sure that the "VIDEO OUT Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been already completed.

Note 2:

Be sure that the SP/LP/EDIT switch (S953 on FP-57 board) is the SP position.

Note 3:

Be sure to terminate CN332 (VIDEO OUT) at 75 ohms.

[Adjusting method]

1) Record the color bar signal.
2) Playback the section recorded by 1).
3) Confirm that the playback output level is 1.00 ±0.05Vp-p.
4) When 3) is not satisfied, adjust RV004 on YP-8 board as follows. And then repeat the abovementioned steps 1) to 3).

	RV004 turning direction
more than the specified value	clockwise (↻)
less than the specified value	counter-clockwise (↺)

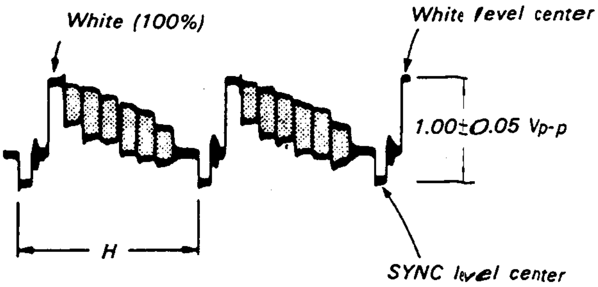


Fig. 3-18.

3-4-11. AC Clip Adjustment (YP-8/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	Pin ㊺ of YP-8 board
Measuring instrument	Oscilloscope
Adjusting element	RV005 on YP-8 board
Specified value	245 ±10%

[Adjusting method]

1) Adjust RV005 on YP-8 board so that the peak of the White (100%) becomes 245 ±10%.

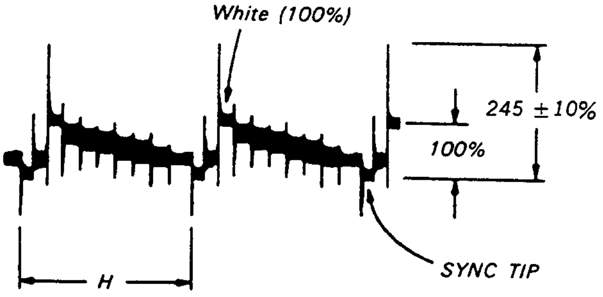


Fig. 3-19.

3-4-12. $375f_H$ VCO Adjustment (CC-10/VA-36 boards)

Mode	E-E
Signal	Color bar
Measurement point	Pin ㉑ of CC-10 board
Measuring instrument	Digital voltmeter
Adjusting element	RV002 on CC-10 board
Specified value	3.0 ±0.4Vdc

[Adjusting method]

1) Adjust RV002 on CC-10 board for 3.0 ±0.4Vdc.

3-4-13. Chroma Emphasis f_0 Adjustment (VA-36 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ㊼ of CC-10 board
Measuring instrument	Oscilloscope
Adjusting element	FL331 on VA-36 board
Specified value	Be sure to confirm that the f_0 component is minimum and zero cross appears between green and magenta.

[Connection]

Connect the following two places of CC-10 board with 47kΩ resistors.

1. ⑱ PIN (ACC) — ㊸ PIN (GND)
2. ⑱ PIN (ACC) — ⑬ PIN (REG 5V)

[Adjusting method]

1) Adjust with FL331 on the VA-36 board so that the amplitude of the flat cyan section of the chroma signal becomes minimum.
   At this point, be sure to confirm that the zero cross appears between the green and magenta.

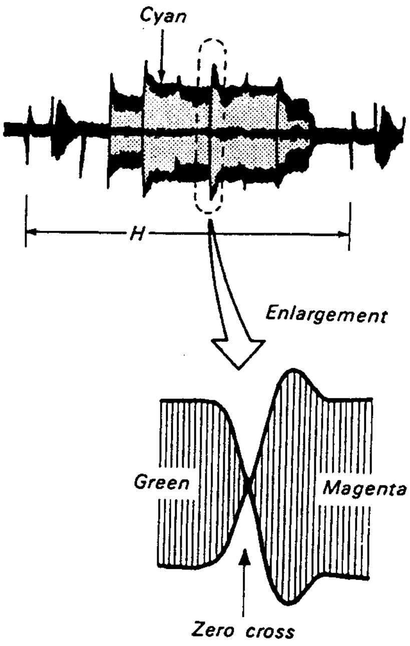


Fig. 3-20.

3-4-14. Carrier Balance Adjustment (CC-10/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	Pin ⑲ of CC-10 board
Measuring instrument	Oscilloscope
Adjusting element	RV001 on CC-10 board
Specified value	Minimum 5.17MHz component

[Adjusting method]

1) Adjust RV001 on CC-10 board so that the 5.17MHz component becomes minimum.

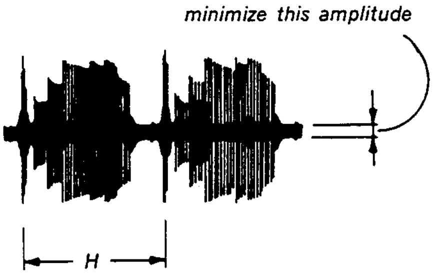


Fig. 3-21.

3-4-15. f_H VCO Adjustment (CC-10/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Color bar
Measurement point	CH1: Pin ㉖ of CC-10 board CH2: VIDEO OUT terminal (CN332)
Measuring instrument	Oscilloscope
Adjusting element	RV004 on CC-10 board
Specified value	14.5 ±0.2μsec

[Adjusting method]

1) Adjust RV004 on CC-10 board so that the T_R of CH1 is 14.5 ±0.2μsec.
2) Confirm that the H (time) of CH1 and CH2 is stable.

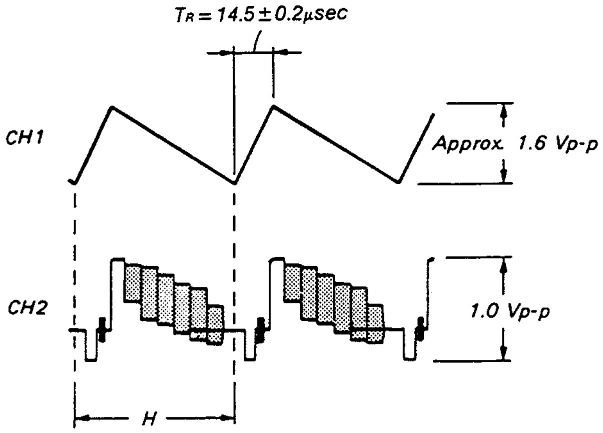


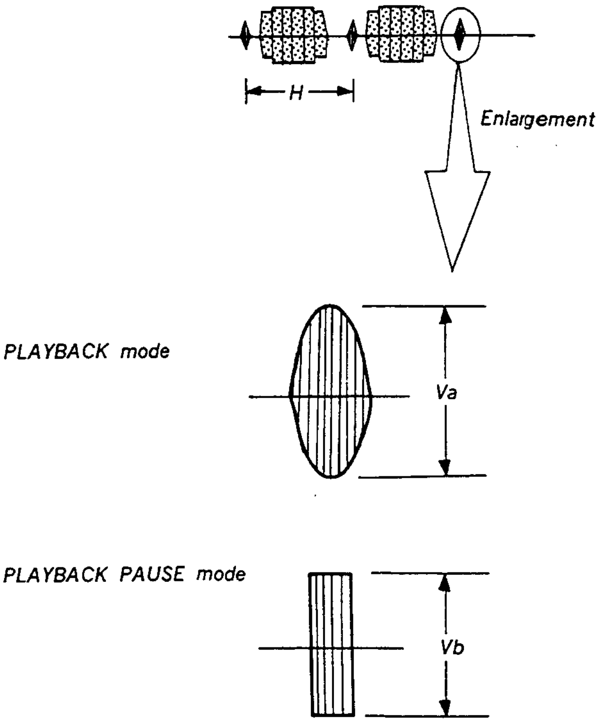
Fig. 3-22.

3-4-16. GCA GAIN Adjustment (CC-10/VA-36 boards)

Mode	Playback & Playback pause
Signal	Alignment tape for operation check (WR5-3CSP), Color bar portion
Measurement point	Pin ㉜ of CC-10 board
Measuring instrument	Oscilloscope
Adjusting element	RV003 on CC-10 board
Specified value	Vb = (Va − 20) ±15mVp-p Va:Peak level of burst signal at playback mode Vb:Peak level of burst signal at playback pause mode

[Adjusting method]

1) Set to playback mode.
2) Measure the peak level of burst signal
3) Set to playback pause mode.
4) Adjust RV003 so that the peak level of burst signal is lower 20mV than Va.



Vb = Va + 20mV

Fig. 3-23.

3-4-17. REC C RF Trap Adjustment (AU-32P/VA-36 boards)

Mode	CAMERA STANDBY
Signal	Arbitrary white black video signal
Measurement point	Oscilloscope: Emitter of Q379
Measuring instrument	Frequency counter: Pin ⑱ of AU-32P board
Adjusting element	CV334
Specified value	Minimum 1.41MHz component

Note 1:

When the 1.41MHz component at Q379 emitter is too low to measure, use 1:1 probe instead of 10:1 probe.

Note 2:

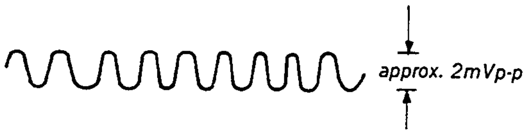
Before this adjustment, remove CN502 for no audio signal input.

[Connection]

Connect a 0.01μF capacitor between pin ⑱ (REC AFM) of AU-32P board and pin ⑲ (REC CHROMA) of CC-10 board.

[Adjusting method]

1) Adjust RV002 on AU-32P board so that REC AFM frequency becomes 1.41 ±0.01MHz.
2) Minimize the 1.41MHz component at Q379 emitter with CV334.
3) Adjust RV002 on AU-32P board so that REC AFM frequency becomes 1.500 ±0.002MHz.



Minimize the amplitude of 1.41MHz signal level

Fig. 3-24.

3-4-18. AFM Trap Adjustment (CC-10/VA-36 boards)

Mode	CAMERA STANDBY
Signal	No signal
Measurement point	Pin ⑳ of CC-10 board
Measuring instrument	Oscilloscope
Adjusting element	CV333
Specified value	Minimum 1.5MHz component

Note:

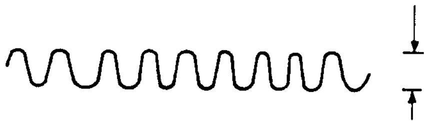
Use 1:1 probe instead of the 10:1 prove, when 1.5MHz component is too low to measurement.

[Connection]

1) Connect a 330Ω resistor between pin ① (5V) and pin ⑤ (PB RF) of FP-60 flexible board.
2) Connect a 0.01μF capacitor between pin ⑤ (PB RF) of FP-60 flexible board and pin ⑱ (REC AFM) of AU-32P board.

[Adjusting method]

1) Minimize the 1.5MHz component at pin ⑳ of CC-10 board with CV333.



Minimize the 1.5MHz component

Fig. 3-25.

3-4-19. REC Y Recording Current Adjustment (VA-36 board)

Mode	Record
Signal	No signal
Measurement point	TP302 on SS-81 board (CH2 CHECK)
Measuring instrument	Oscilloscope
Adjusting element	RV331
Specified value	245 ±20mVp-p

Note:

Be sure to perform each Recording Current Adjustment of REC C, REC AFM and REC AFM after the REC Y Recording Current Adjustment.

[Adjusting method]

Adjust RV331 for 245 ±20mVp-p.

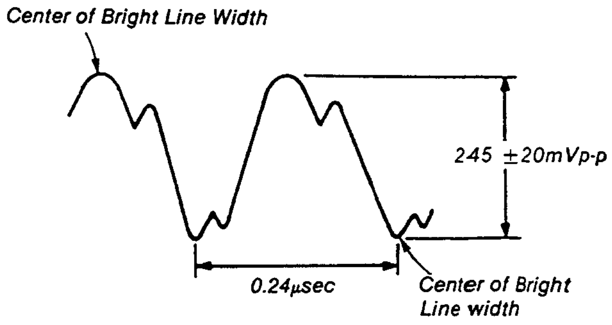


Fig. 3-26.

3-4-20. REC C Recording Current Adjustment
(VA-36 board)

Mode	Record
Signal	Color bar
Measurement point	TP302 on SS-81 board (CH2 CHECK)
Measuring instrument	Oscilloscope
Adjusting element	RV332
Specified value	44 ±5mVp-p

Note 1:

Be sure to perform REC AFM Recording Current Adjustment after the REC C Recording Current Adjustment.

Note 2:

Use MP type tape.

[Connection]

1) Short the following three portions with a lead wire.
   1. Pin ㊵ of YP-8 board (REC Y RF) — GND
   2. Pin ⑧ of AT-6 board (REC ATF) — GND
   3. Pin ⑱ of AU-32 board (REC AFM) — GND

[Adjusting method]

Adjust RV332 for 44 ±5mVp-p.

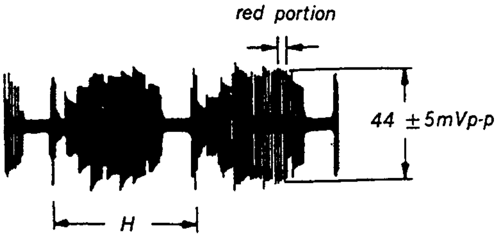

red portion
44 ±5mVp-p
H

Fig. 3-27.

3-4-21. REC AFM Recording Current Adjustment
(VA-36 board)

Mode	Record
Signal	Color bar
Measurement point	TP302 on SS-81 board (CH2 CHECK)
Measuring instrument	Oscilloscope
Adjusting element	RV333
Specified value	10 ±1mVp-p

Note 1:

Use MP type tape.

Note 2:

Connect directly through a 100 ohms resistor as shown below, not to use the 10:1 probe, when TP302 signal level is too small to read.

[Connection]

Short the following three portions with a lead wire.

1. Pin ㊵ of YP-8 board (REC Y RF) — GND
2. Pin ⑧ of AT-6 board (REC ATF) — GND
3. Pin ⑲ of CC-10 board (REC C RF) — GND

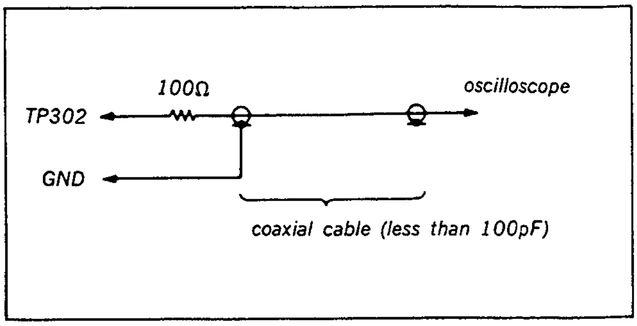

100Ω
oscilloscope
TP302
GND
coaxial cable (less than 100pF)

Fig. 3-28.

[Adjusting method]

Adjust RV333 for 10 ±1mVp-p.

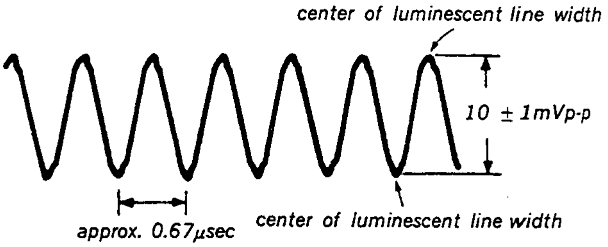

center of luminescent line width
10 ± 1mVp-p
approx. 0.67μsec
center of luminescent line width

Fig. 3-29.

3-4-22. DDS Character Position Adjustment
(VA-36 board)

Mode	Camera standby
Signal	All black (Cover the lens with a black cap.)
Measurement point	Pin ③ of the CN333 (VIDEO)
Measuring instrument	Oscilloscope
Adjusting element	CV332
Specified value	10.5 ±0.7μsec

Note:

Be sure to connect the Camera section during the adjustment.

[Adjusting method]

1) Adjust CV332 for 10.5 ±0.7μsec.

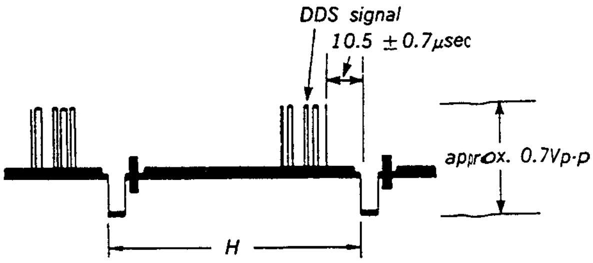

DDS signal
10.5 ±0.7μsec
approx. 0.7Vp-p
H

Fig. 3-30.

3-5. AUDIO SYSTEM ADJUSTMENT

Before adjustment, take off a connector from CN502 on VA-36 board, and connect a audio attenuator instead of the connector as shown below.

Color bar signal should input to VIDEO IN terminal for the adjustment.

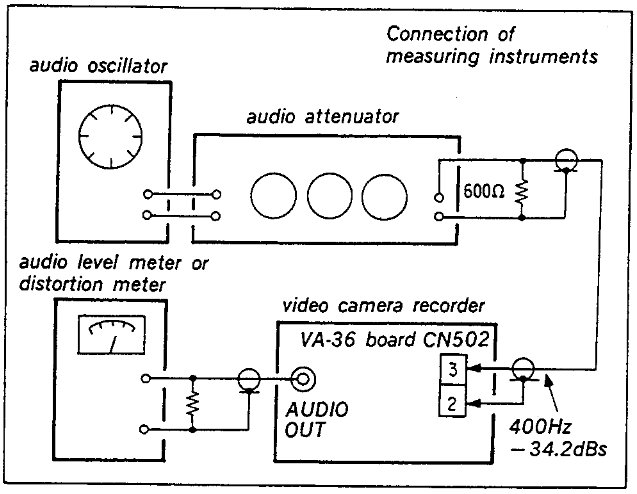


Fig. 3-31.

3-5-1. AFM Carrier Frequency Adjustment (AU-32P board)

Mode	Record
Signal	No signal
Measurement point	Pin ⑱ of AU-32P board (REC AFM)
Measuring instrument	Frequency counter
Adjusting element	RV002
Specified value	1.500 ±0.002MHz

[Adjusting method]

1) Adjust RV002 for 1.500 ±0.002MHz.

3-5-2. AFM Deviation Adjustment (AU-32P board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-3CSP)
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Adjusting element	RV001
Specified value	−10 ±0.2dBs

[Adjusting method]

1) Adjust RV001 so that the audio output level becomes −10 ±0.2dBs.

3-5-3. E-E Output Level Check

Mode	Record
Signal	400Hz, −34.2dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−10 ±2dBs

[Checking method]

1) Be sure the audio output level is −10 ±2dBs.

3-5-4. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400Hz, −34.2dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−10dB ±3dBs

[Checking method]

1) Record the signal
2) Playback the recorded portion.
3) Be sure the audio output level is −10 ±3dBs.

3-5-5. Overall Distortion Check

Mode	Self-recording and playback
Signal	400Hz, −34.2dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Distortion meter
Specified value	Less than 0.5% *[1]

[Checking method]

1) Record the signal.
2) Playback the recorded portion.
3) Be sure the distortion is less than 0.5%. *[1]

*[1] The value in case of using a distortion measuring filter (Fig. 3-32).
It is under 1.0% without the filter.

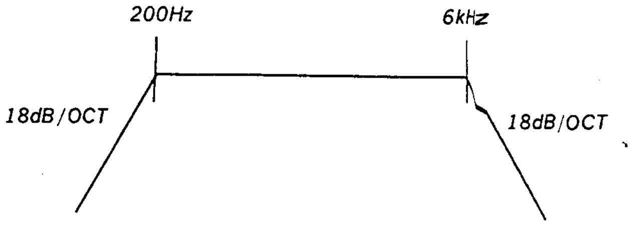


Fig. 3-32.

3-5-6. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal Short pin ③ (MIC IN) and pin ② (GND) of CN502 on VA-36 board with a lead wire.
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	Less than −70dBs *²

[Checking method]

1) Record the signal.
2) Playback the recorded portion.
3) Be sure the noise level is less than −70dBs. *²

*² The value in case of using IHF-A weighting filter.

3-6. ELECTRONIC VIEW FINDER SYSTEM ADJUSTMENT

3-6-1. Horizontal Slant Adjustment

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-3CSP)
Specified value	See Fig. 3-34

[Adjusting method]

1) Adjust the volume array Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 3-35.)
2) Loosen the DY (deflection yoke) tightening nut.
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

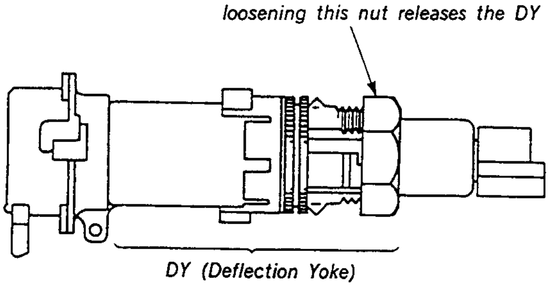
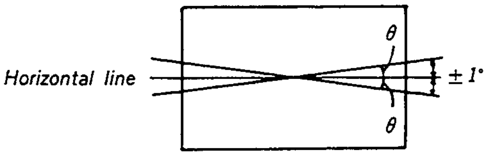
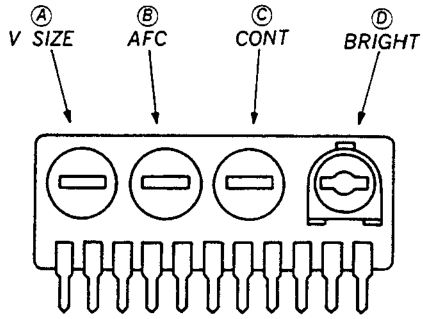


Fig. 3-33.



Specified value: A picture is positioned within ±1° of the horizontal line.

Fig. 3-34.



Volume array (CP901)

Fig. 3-35.

3-6-2. Centering Adjustment

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-3CSP)
Specified value	See Fig. 3-37.

[Adjusting method]

1) With the centering magnets, position the screen in even peripheral margins, both horizontally and vertically.

Note:

Since the center position is affected by the terrestrial magnetism, adjust at the center of displacement with turning the unit 360° horizontally.

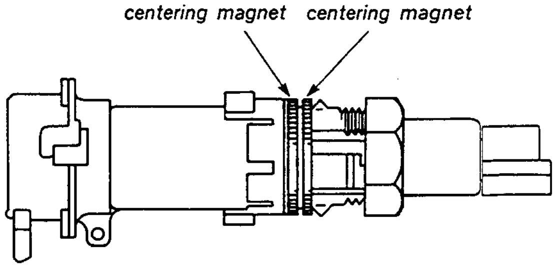
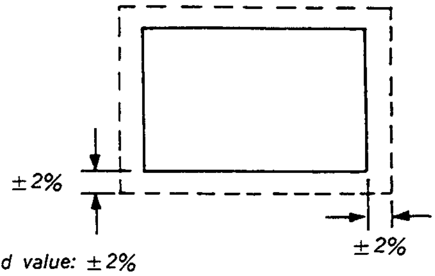


Fig. 3-36.



Specified value: ±2%

Fig. 3-37.

3-6-3. AFC Adjustment (VF-9P board)

Mode	Camera standby
Signal	Color bar
Measurement point	Pin ⑲ of IC904
Measuring instrument	Digital volt meter or oscilloscope (DC range)
Adjusting element	Volume array Ⓑ
Specified value	2.65 ±0.1Vdc

[Adjusting method]

1) Adjust volume array Ⓑ for 2.65 ±0.1Vdc. (See Fig. 3-35.)

3-6-4. Horizontal Amplitude Adjustment (VF-9P board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-3CSP)
Adjusting element	C905
Specified value	6 ±3%

[Adjusting method]

1) Focus with RV901.
2) Adjust volume array Ⓐ so that the upper and lower edges of the monoscope picture fits those of the screen.
3) Turn volume array Ⓓ for appropriate brightness.
4) Connect or disconnect the patterns A and B, which is connected to C905 H size adjusting capacitor, so that the horizontal overscan becomes 6 ±3% (total of the both sides, right and left). (See Fig. 3-38.)

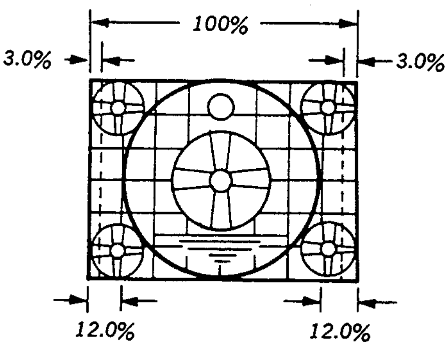
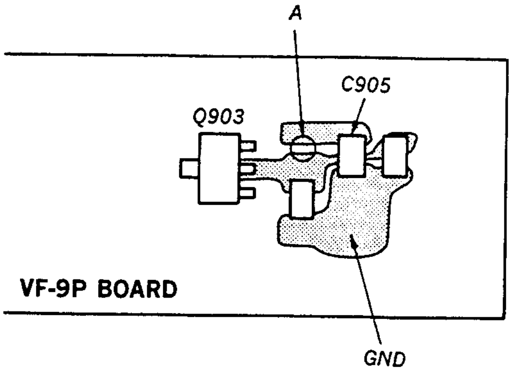


Fig. 3-38.



A	H size
Disconnect	Small ↕
Connect	Large

Fig. 3-39.

3-6-5. Vertical Amplitude Adjustment (VF-9P board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-3CSP)
Adjusting element	Volume array Ⓐ
Specified value	6 ±3%

[Adjusting method]

Adjust the volume array Ⓐ for 6 ±3% vertical overscan (total of the both sides, top and bottom).

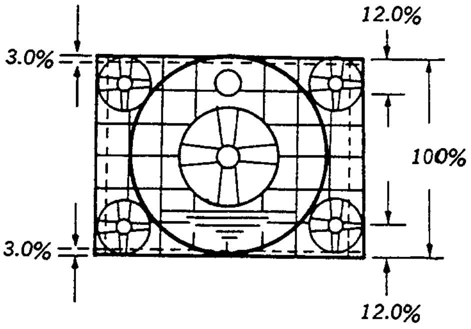


Fig. 3-40.

3-6-6. Brightness and Contrast Adjustment (VF-9P board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-3CSP)
Adjusting element	Brightness: Volume array Ⓓ Contrast: Volume array Ⓒ

[Adjusting method]

1) Adjust volume array Ⓓ and Ⓒ alternately so that light and dark areas of a gray scale is correctly displayed. (The light area should not be so bright that the cross hatch in a monoscope circle blurs. And the dark area should not be so dark that the darkest area and third darkest one on the gray scale can not be distinguished each other.)

3-6-7. Focus Adjustment (VF-9P board)

Mode	Playback and camera standby
Signal	Monoscope portion of alignment tape for operation check (WR5-3CSP)
Adjusting element	RV901

[Adjusting method]

1) Make the unit into camera standby mode, close the iris control and display DDS, adjust RV901 for the best focus point of DDS display.
2) Change the unit into playback mode, confirm the best focus point on monoscope portion.

Note:

Perform the Focus adjustment after assembling the cabinet. The focus volume control is located shown below detaching the accessory shoe.

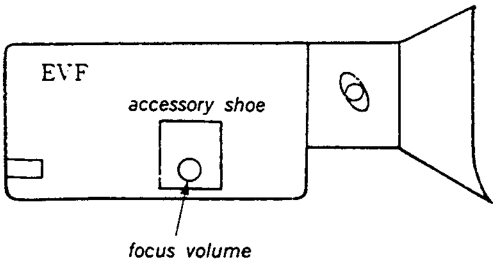


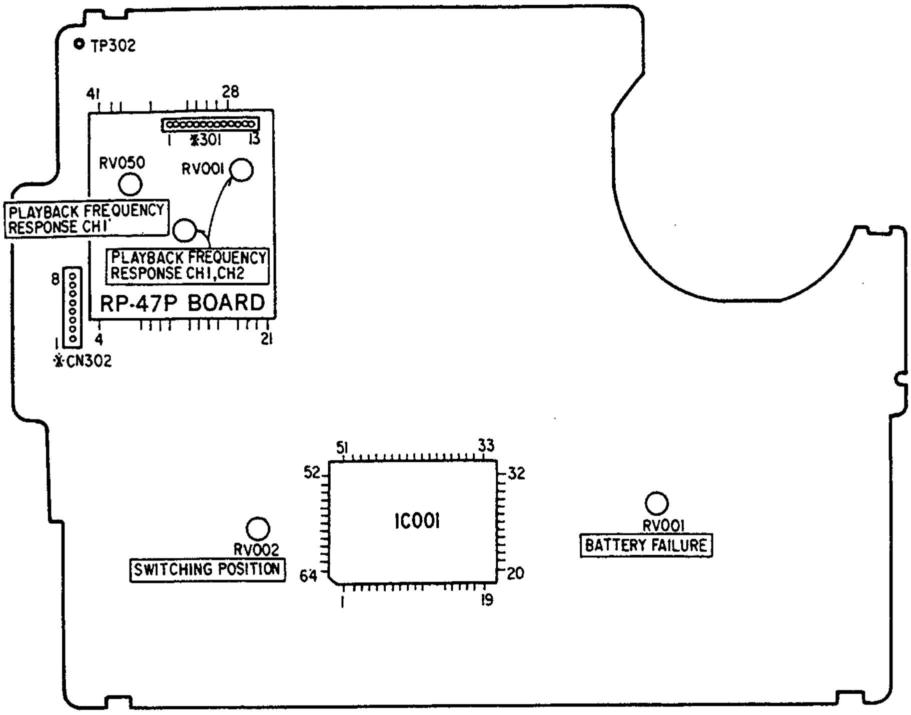
Fig. 3-41.

3-6-8. Horizontal and Vertical Amplitude Check

Confirm that the specified value of 3-6-4. Horizontal Amplitude Adjustment and 3-6-5. Vertical one is satisfied. If it is not, readjust them with 3-6-6. Brightness, Contrast Adjustment and 3-6-7. Focus Adjustment

3-7. ADJUSTMENT ELEMENTS LOCATION

SS-81 board (Component side)

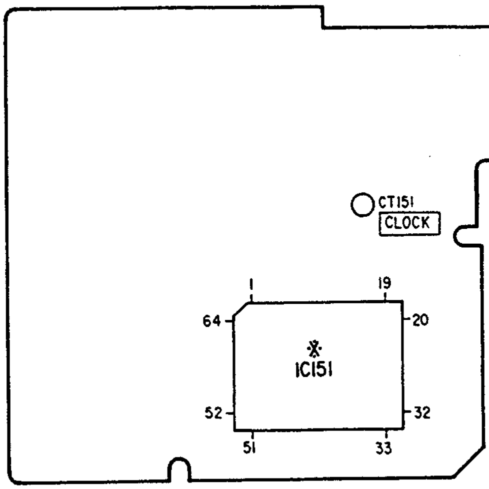


TP302
41
28
1
※301
13
RV050
RV001
PLAYBACK FREQUENCY RESPONSE CH1
PLAYBACK FREQUENCY RESPONSE CH1,CH2
RP-47P BOARD
8
1
4
21
※CN302
51
33
52
32
IC001
64
20
1
19
RV002
SWITCHING POSITION
RV001
BATTERY FAILURE

Marked ※ parts are mounted on soldering side.

- Adjust the elements on RP-47P board through the hall of SS-81 board.

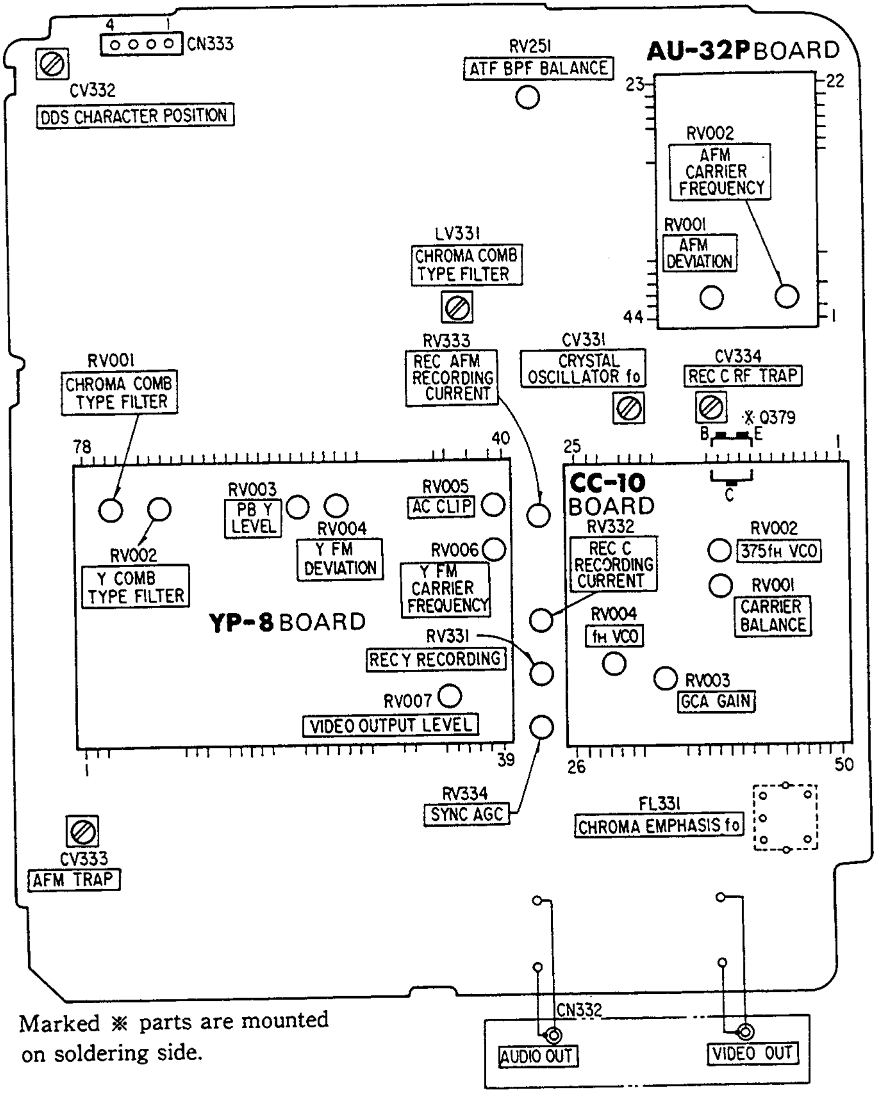
FD-4P board (Component side)



CT151
CLOCK
1
19
64
20
※
IC151
52
32
51
33

Marked ※ part is mounted on soldering side.

VA-36 board (Component side)

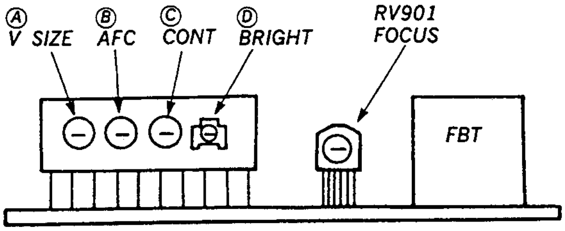

4
1
CN333
CV332
DDS CHARACTER POSITION
RV251
ATF BPF BALANCE
AU-32P BOARD
23
22
RV002
AFM CARRIER FREQUENCY
RV001
AFM DEVIATION
44
1
LV331
CHROMA COMB TYPE FILTER
RV333
REC AFM RECORDING CURRENT
CV331
CRYSTAL OSCILLATOR fo
CV334
REC C RF TRAP
※ Q379
B
E
C
RV001
CHROMA COMB TYPE FILTER
78
40
25
1
RV003
PB Y LEVEL
RV005
AC CLIP
RV004
Y FM DEVIATION
RV006
Y FM CARRIER FREQUENCY
RV002
Y COMB TYPE FILTER
YP-8 BOARD
RV331
REC Y RECORDING
RV007
VIDEO OUTPUT LEVEL
1
39
CC-10 BOARD
RV332
REC C RECORDING CURRENT
RV002
375fH VCO
RV001
CARRIER BALANCE
RV004
fH VCO
RV003
GCA GAIN
26
50
RV334
SYNC AGC
FL331
CHROMA EMPHASIS fo
CV333
AFM TRAP
CN332
AUDIO OUT
VIDEO OUT

Marked ※ parts are mounted on soldering side.

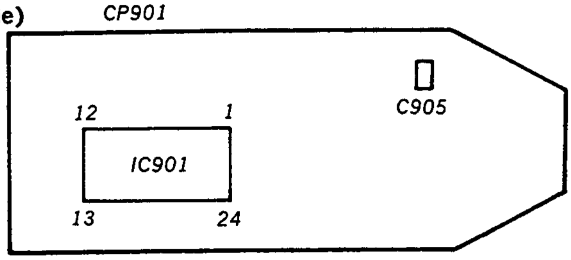
- CC-10, YP-8, AU-32P boards are mounted on VA-36 board.

VF-9P board (Component side)

(Side view)


Ⓐ V SIZE
Ⓑ AFC
Ⓒ CONT
Ⓓ BRIGHT
RV901 FOCUS
FBT

(Component side)


CP901
C905
12
1
IC901
13
24